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INCREASING FRUITS, VEGETABLES, AND WHOLE GRAINS IN PRESCHOOL SACK LUNCHES

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INCREASING FRUITS, VEGETABLES, AND WHOLE GRAINS IN PRESCHOOL SACK LUNCHES

by

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Dedication

I would like to dedicate this document and the work it represents to my parents who laid the foundation with the beliefs that education was important and I could succeed at anything I chose to do; to my husband for the love and support that sustains me in all aspects of my life; and to my children who are and will always be my greatest accomplishments.

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The purpose of this study was to revise the *Lunch Box Program* using the Intervention Mapping process to design a program for parents of preschool age children in the childcare setting. Program development was guided by input from group interviews (n = 3) that were held with parents (n = 31) at three child care centers. Four major themes were revealed 1) interest in receiving information in written format; 2) activities that stimulate parent interaction; 3) workshops and activity stations; and 4) recommendations for support from local supermarkets. *Lunch Is In The Bag* emphasizes packing fruits, vegetables and whole grains in lunch daily.

In a quasi-experimental design, six childcare centers were paired by size before being randomly assigned to intervention (n=3) and comparison (n=3) groups. The parents with primary lunch packing responsibility for the three to five year old children were enrolled

as parent-child dyads. Primary outcome measures included lunch contents of fruits, vegetables and whole grains. Secondary outcome measures included change in behavioral constructs and process outcome measures included fit of program into operations and curriculum.

A total of 132 parent-child dyads completed the study, 81 in the intervention group and 51 in the comparison group. Direct observation of children's lunches from the intervention group showed a significant increase in predicted mean number of servings of vegetables, from 0.41 to 0.65 ($P < 0.001$) and whole grains, from 0.54 to 1.06 ($P < 0.001$), but not fruit.

The intervention demonstrated a significant effect on knowledge of meal patterns ($p = 0.010$); outcome expectations for packing whole grains ($p < 0.001$); and subjective norms for packing fruit ($p = 0.002$), vegetables ($p = 0.046$), and whole grains ($p = 0.015$). Perceived behavioral control ($p = 0.000$), expectations ($p = 0.007$), and intentions ($p = 0.048$) were significant independent predictors for packing vegetables. Knowledge significantly predicted packing whole grains ($p = 0.000$).

Process outcome data indicated *Lunch is in the Bag* was a feasible nutrition education program that fit well into both the childcare center operations and curriculum.

Table of Contents

List of Tables

Introduction: Increasing Fruits, Vegetables and Whole Grains in Preschool Sack Lunches

Childhood overweight and obesity have reached epidemic proportions in the United States (1). Over 30% of children ages 2-17 years are overweight or obese (2). For two to five year old children alone the numbers are staggering. Over 12% of two to five year olds are obese and one quarter are overweight. In addition, one in four preschool age children are in danger of becoming overweight (3). The epidemic will contribute to a dramatic rise in related chronic illness once associated with adults. The lifetime risk of diabetes alone has risen to 30% for boys and 40% for girls (4).

Reversal of this frightening trend must begin with the young preschool children at the time when eating habits and physical activity patterns are formed. Research has shown that between the ages of three and four these behavior patterns are made for life. Additionally over 11 million of the 21 million preschool children are in care outside of the home while their parents work (4). This captive audience is the ideal workshop for establishment of healthy life behaviors such as daily consumption of fruits, vegetables and whole grains. Research efforts in this environment have the potential of long lasting consequences for individuals, families and communities. The places parents and their children live, work, study and play have a strong influence on the ability to meet the goal of greater intake of fruit, vegetables and whole grains.

The childcare center environment offers a unique setting for nutrition education since the primary focus is the health and development of the very young child, who still requires constant adult supervision and assistance in many daily tasks. The study *Increasing Fruits, Vegetables and Whole Grains in Preschool Sack Lunches* takes advantage of this setting in order to pilot test a nutrition education program designed specifically for parents of preschool age children and the childcare center environment. The first task of the research study (specific aim #1) was to adapt a nutrition education tool for parents of preschool age children, the *Lunch Box Program,* that was developed by the San Luis Obispo Extension program. Intervention Mapping was used as the

guide to develop the new nutrition education tool, *Lunch Is In The Bag,* a behavior-based intervention with a focus on packing more fruits, vegetables and whole grains in preschool age children's lunches.

Specific aims 2-4 evaluated the implementation of *Lunch Is In The Bag* through different outcome measures of a pilot study. The primary outcome measure (specific aim #2) evaluated the contents of the sack lunches to determine if the number of servings of fruit, vegetable and whole grain items had increased as a result of the intervention. A secondary outcome measures (specific aim #3) evaluated the change in behavioral constructs associated with the behaviors of packing fruit, vegetable and whole grain items as a result of the intervention. The process outcome measure (specific aim #4) evaluated the feasibility of implementing the revised program in the childcare center environment. As a result the Intervention Mapping process provided the structure for development, implementation and evaluation both of behaviors and in the chosen environment of the childcare centers.

The primary hypothesis of the research study was that, when parents with children in childcare centers with no program are compared with parents of children in childcare centers with *Lunch Is In The Bag,* the parents in the intervention group will pack significantly more fruits, vegetables and whole grain products. The secondary hypothesis was that when parents with children in childcare centers with no program are compared to parents of children are a childcare center with *Lunch Is In The Bag* the intervention group will demonstrate: 1) greater knowledge of appropriate meal patterns for packing sack lunches; 2) greater self-efficacy in packing fruits, vegetables and whole grains in their child's sack lunches; 3) greater expectations about the benefits of packing fruits, vegetables and whole grains in their children's sack lunches; 4) greater subjective norms for packing fruits, vegetables and whole grains in their children's sack lunches; and 5) greater intentions to pack fruits, vegetables and whole grains in their children's sack lunches.

Chapter 1: Review of Literature

Trends and Health Issues

Adequate intakes of fruits, vegetables and whole grains are an integral part of public health promotion tools for healthy eating patterns (e.g., MyPyramid, US Dietary Guidelines, Fruits & Veggies More Matters) (5,6,7). These low energy, nutrient-dense foods 1) provide valuable nutrients and dietary fiber that aid in health promotion and disease prevention (8); and 2) have been shown to displace high-energy, low-nutrient foods when added to daily intake (9). Research has shown that consistently poor dietary practices can hasten the development of chronic diseases such as obesity, diabetes, heart disease and certain cancers (8,10).

Overweight and obesity as well as type 2 diabetes rates have increased over the past 3 decades (2,3). These rate increases have tracked with corresponding changes in food consumption patterns (11). Kant and Graubard presented NHANES data for self reported food consumption for men and women from 1971-1975 to 1999-2002 that demonstrated that despite the mean number of daily eating episodes remaining the same, there was a significant increase in grams of food and beverage and kilocalories per episode (Table 1.1) (12). This resulted in a 227 – 247 mean daily kilocalorie increase which would equate to weight gain of 23.67 – 25.76 lbs in one year. These trends correspond with an increase in the rate of obesity from 15% (NHANES I) to 31.3% (NHANES 2001-2002) (10). Currently the rate of obesity is 34.3% (2).

Table 1.1. Change in mean grams of food and beverage and kilocalories per eating episode and mean daily kilocalorie intake from NHANES I and NHANES 1999-2000[a].

	NHANES I		NHANES 1999-2000	
	Mean	SD[b]	Mean	SD
grams food & beverage/ eating episode*	467	5.0	555	7.0
kilocalorie/eating episode*	410	4.0	470	4.0
Kilocalorie/day*	1968	26.0	2205	16.0

[a] Kant AK, Graubard BI. Secular trends in patterns of self-reported food consumption of adult Americans: NHANES 1971-1975 to NHANES 1999-2002. Am J Clin Nutr. 2006;84:1215-1223.
[b] SD = Standard Deviation
* P = 0.0001

Unfortunately, the increase in caloric density of eating episodes does not reflect a corresponding increase in consumption of fruits, vegetables and whole grains. The mean average servings of fruit did not change significantly between NHANES II (1976-1980) and NHANES 1999-2002, moving from 1.07 ±0.03 to 1.08 ± 0.04. While there was a significant increase in mean servings of vegetables from 1.77 ± 0.02 to 1.97 ± 0.03 ($p = 0.029$), the mean servings of fruits and vegetables combined falls short of the national recommendations of five to nine servings per day (11,13). Whole grain consumption data are not as readily available. Based on the USDA Continuing Survey of Food Intakes for Individuals (CSFII) data for 1994-1996 and 1998 Americans consumed 6.7 oz. of total grains per day and met only 34% of the 2005 US Dietary Guidelines recommendations for whole grain (14). Based on data from the Economic Research Service for 2003, Americans consumed an average of 10 servings per day of grains yet only one was a whole grain product (15). This 60% increase in grain consumption was primarily composed of ready-to- eat cereal and snacks (16). According to the American Heart Association, the NHANES 2005-2006 data show that white and black male and female adults consumed an average of 0.5 – 0.9 serving of whole grains per day (17).

These trends in overweight and obesity and their related preconditions for chronic disease can be seen in young children as well. Data from CDC generally lag several years behind the current year, Ogden presented analysis of the NHANES data from 2003-2004 and 2005-2006 that showed 31.9 percent of children ages 2-19 presented with a BMI of greater than 85th percentile. Specifically, the data showed that 24.4% of children aged 2-5 years had a BMI greater than the 85th percentile and 12.4% had a BMI of greater than the 95TH percentile (18). These rate increases correspond to higher incidences of risk factors for cardiovascular disease such as elevated blood cholesterol levels and blood pressure, as well as type 2 diabetes, fatty degeneration of the liver and, sleep apnea in children (2,8,10). Research also shows that these

overweight and obese children have a greater likelihood to become overweight and obese adults (19-21).

Dietary trends among young children show some similarities and some differences. The Healthy Eating Index (HEI) based on 1998 USDA CSFII data revealed that 57% of two to three year olds met the dietary recommendations for grains, 35% for vegetables and 60% for fruit. As the children went up in age the values went down: 31% of four to six year olds met recommendations for grains, 19% for vegetables and 35% for fruit (22). The HEI for 2005, based on NHANES 2003-2004, scored food differently with categories based on 100 point scale with 100 as the highest score. Children aged two to five years old received an average score of 100 for total fruit, 44 for total vegetables and 17 for whole grains (23). It should be noted that in October of 2008 the USDA published the MyPyramid for Preschoolers which presented the daily recommendations for fruits and vegetables as one to two cups per day (5). Lorson evaluated the NHANES 1999-2002 dietary intake for children and reported that children ages two to five years of age had a mean intake of 1.29 ± 0.06 cup equivalents for fruit and 0.76 ± 0.03 for vegetables (24). These data indicate that the fruit intake for this age group appears in 1999 – 2002 to meet the newer recommendations while vegetables and whole grain do not.

Childcare and nutrition in the United States

The need for childcare in the United States has tracked with the increase in numbers of mothers in the work force. The rate of working mothers of children under the age of 18 has grown from 8% in the 1940's to 64 % in 2008 (4,25). Over 11 million children under age five have working mothers. Preschool age children with working mothers will spend an average of 36 hours per week in non-parental childcare (4). Many of those children will spend time at one of more than 118,000 childcare centers (4). Fulltime child care can be divided into home-based care and center-based-care with center-based care further subdivided into Head Start and other center-based care. The American Dietetic Association (ADA) defines fulltime care as 8 hours

per day and part time care as 7 hour or less per day. When these periods encompass meal and snack times, it is the position of the ADA that during fulltime care children should receive one half to two thirds of their nutritional needs and during part time care they should receive 1/3 of those needs (26).

Nutritional standards for childcare centers vary by program and state. As a federally funded program, Head Start centers are required to provide defined proportions of nutrients and follow the recommendations of current US Dietary Guidelines. Centers that participate in the Child and Adult Care Feeding Program (CACFP) simply follow a structured meal and snack pattern of age specific servings sizes of food groups. Childcare centers that provide meals and snacks adhere to individual state regulations. The majority of state regulations for center-based food service recommend adherence to the CACFP meal/snack pattern or a similar pattern. Nineteen states require center-prepared meals and snacks to provide a specific proportion of nutritional needs and two states recommend following the 2005 US Dietary Guidelines (27). The majority of childcare centers in the US provide meals and snacks; however, many centers expect children to bring meals and snacks from home. State regulations do not extend to meals and snacks that are supplied from home.

An accurate accounting of centers that require parents to send lunches from home remains elusive since no government, state or federal agency track the data. A questionnaire for child-care center directors conducted with a random sample among four western states showed that 41% of the centers reported some or all of the lunch food was sent from home (28). A local survey of 194 childcare centers in Travis and Williamson counties in 2004 revealed that 46% (n=89) had closed their food service operations during the previous year in favor of requiring parents to provide for their individual children's nutritional needs (29). An informal telephone survey of center directors for 1396 centers in the San Antonio, Brownsville, San Marcos and

Houston areas conducted in the spring of 2009 showed that 9% required parents to send meals from home (Briley ME, unpublished, 2009).

Childcare centers that provide meals and snacks have their menus evaluated regularly by the state designated licensing agency to ensure adherence to nutritional standards (30). No regulatory agency examines lunches sent from home in childcare centers with no in-house food service. While several studies have studied the nutritional adequacy of menus and/or meals served by childcare centers, few studies have examined the nutritional content of lunches sent from home (31,32). Bruening compared lunches sent from home to lunches served and found children who consumed the CACFP lunches consumed more Vitamin A, riboflavin, calcium and servings of vegetables and dairy and significantly fewer servings of fats and sweets (33). These data were echoed in a study that examined lunches for preschool age children in childcare in the Waco and Killeen area of Texas. Over 51% of the lunches sent from home (n = 74) did not meet the 33% (1/3) DRI for energy, Carbohydrates, dietary fiber, Vitamin A, Calcium, Iron and Zinc. Further, 70% did not meet CACFP serving standard for fruits and vegetables and 80% lacked adequate dairy (34). A small study of preschool children's lunches in California found 60% of lunches sent from home had 3 or fewer food groups, 16% had a vegetable, 69% had fruit or 100% fruit juice, 81 % had a low-nutrient food (35). These studies clearly indicate that the nutritional content of preschool age children's lunches sent from home may be problematic and can be improved.

Childcare centers offer a practical environment for parent nutrition education. Childcare centers in general already offer many opportunities to learn and practice healthy eating habits for the young child (27). Parents also view childcare centers as acceptable communicators of health and nutrition education for themselves (36). Group interviews of parents of preschool age children attending childcare centers requested written information, workshops and activity stations to help them pack healthy lunches (Sweitzer SJ, unpublished, 2007).

Dietary Behaviors of Preschool-aged Children.

Development of food preferences begins in infancy and are well established by four years of age (37,38). Infants register positive facial expressions for salty and sweet flavors and avoidance of sour and bitter flavors at four months of age (39). This preference for sweet tasting foods is still present in children ages three to five years old. As table foods are introduced at six months, foods begin to be preferred based on experience or familiarity (40,41). Infants who were exposed to a wide variety of foods more readily accept a novel food, implying that familiarity with diverse flavors increases the readiness to experience novel tastes (42,43). Birch et al. have demonstrated that sweetness and familiarity guided three to five year olds' food preferences and classification of food (44,45).

Repeated exposure to a variety of foods during the period of early childhood aids the development of a wide array of food preferences. Frequent encounters that allow the child to see and taste the food encourages acceptance of the food into their repertoire (46,47). Exposure is also an important tactic to use for food neophobia or fear of new foods, a common development among children ages 18-24 months (48,49). This period can vary in length and duration but the most intense period is associated with young children, ages two to three years. Repeated exposure to new foods may need to occur between 9-15 times before they will accept it (50).

Children's food preferences are also influenced by the social context surrounding the eating episode. Preschool-aged children's consumption of a novel or disliked food increases after observation of other children or significant adults such as mother or teacher who model consumption of a food (51-53). Dunker and others have demonstrated fictional characters in a story could exert influence over a young child to consume a new or disliked food (54,55). Birch further showed that repeatedly presenting a food in a positive social situation increased liking of that food and conversely, repeated exposure to a food in a negative setting decreased liking (56,57). Social settings such as family meal time with parents and older siblings or lunchtime at

the childcare center offer valuable and effective social exposure for the young child and have been associated with greater intake of F/V and decreased intake of high fat foods (58).

Modeling and exposure are important external cues for the preschool-aged child; however children this age retain important internal cues as well. Preschool age children will respond to the caloric density of familiar foods and self regulate their caloric intake within meals in response to internal hunger and satiety cues (59-61). Young children aged four to five demonstrate this ability more consistently than older children and adults are not consistent (62,63). These abilities to compensate at meal times for energy needs and self-regulate their intake by sensing their hunger and satiety cues are useful tools to promote healthy weight maintenance in young children. This compensation tendency has been found to be related to adiposity, as shown by children who are less able to regulate their intake tend to be heavier (64).

Availability, accessibility, modeling and the social context have all been linked to fruit and vegetable intake in young children. Several studies have demonstrated a direct relationship between availability and accessibility of fruits and vegetables with children's consumption (65-67). Modeling consumption of fruits and vegetables are effective ways parents can positively influence young children's intake of fruits and vegetables (68-71) Planned family meal time provides a positive social experience that can enhance young children's fruit and vegetable intake (58,71).

Theory and Behavior

Theoretical frameworks can provide a foundation for successful behavior modification in nutrition education programs through identification of behavioral constructs that influence an individual's actions. Two theories that have been employed to guide nutrition education are the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT). The behavioral constructs of attitudes, subjective norms, perceived behavioral control and intentions make up the TPB model. TPB identifies intentions as the direct antecedent to behavior and in turn the

attitudes, subjective norms and perceived behavioral control are antecedents of intention. An individual's behavioral beliefs that a behavior will have positive or negative consequences influence their attitude toward a behavior. Subjective norms are influenced by normative beliefs or if an individual perceives that people important to them feel positively or negatively about a behavior. Control beliefs influence perceived behavioral control through an individual's perception of existing barriers or facilitator to the behavior. While behavioral beliefs, normative beliefs and control beliefs are viewed as influencing each other, each set of beliefs guides their related behavioral construct in a sequential manner toward intentions which in turn determines the performance of the behavior (72).

SCT presents behavior, environment, and personal factors in a triadic model, and each are continually interacting in manner termed reciprocal determinism. Personal factors including behavioral constructs such as skills, knowledge, self-efficacy, outcome expectations, and social support all contribute to the individual's observational learning to perform a behavior. The physical environment or the individual's perceptions of the environment through barriers and facilitators exert influence over performance of a behavior. The individual's behavioral capability will reciprocally influence the individual's continued operational learning and perceptions of the environment. Reinforcement, either extrinsic or intrinsic, will influence repetition and frequency of a behavior (73).

The two theories contain similar constructs that have been shown to be associated with dietary behaviors of fruit and vegetable consumption. Several studies have applied the TPB model to explain fruit and vegetable intake (74-76) while other researchers have chosen SCT as their framework (77,78). Key constructs from both theories have been shown to significantly predict and/or mediate the behavior of consumption of fruits and vegetables: attitudes(74,75,79,80) and outcome expectations (81-83), intentions (74,75,80), knowledge

(79,83), self-efficacy (79-81,83) and perceived behavioral control (75,80), and social support and subjective norms (79-81,83).

The relationship of psychosocial constructs and the parents' behavior of packing fruits, vegetable and whole grains for their preschool-age child has not been examined. A study with mothers participating in the Special Supplemental Nutrition Program for Women Infants and Children showed that the mother's consumption of fruits and vegetables was positively associated with knowledge ($r = 0.52$, $p = 0.001$), self-efficacy ($r = 0.76$, $p = 0.001$), and attitudes ($r = 0.27$, $p = 0.001$) (84). Gibson looked at the relationship of mothers' consumption and their 9 -11 year old child's consumption of fruits and vegetables. The mothers' nutrition knowledge ($\beta = 0.37$) and attitudes about health benefits ($\beta = 0.27$) independently predicted child consumption of fruits while mothers' belief in health benefits ($\beta = 0.27$) predicted the child's consumption of vegetables (85). Villarubia explored the behavioral constructs around parents serving vegetables to their children and found that attitudes about health benefits ($r = 0.56$, $p < 0.01$), subjective norms ($r = 0.35$, $p < 0.01$), and perceived behavioral control ($r = 0.52$, $p < .01$) were significantly associated with intentions and intentions ($r = 0.57$, $p < 0.01$) and perceived behavioral control ($r = 0.53$, $p < 0.01$) were significantly associated with the serving behavior (86).

Measurement of Behavioral Constructs

Behavioral constructs selected for this study were attitudes, outcome expectations, knowledge, perceived behavioral control/self-efficacy, subjective norms and intentions. Perceived behavioral control and self-efficacy are generally considered to be similar (87,88). No validated instruments were found that measured behavioral constructs as they related to lunch packing behaviors. Validated instruments exist that measure parent's attitudes, perceived behavioral control, subjective norms and intentions for serving vegetables to children (86) as well as parent's outcome expectations for purchasing fruits and vegetables (89). Table 2 shows

the selected items from these instruments along with their internal consistency values. Villarubia measured attitudes for servings vegetables as semantic differential items that asked the subject to evaluate the behavior as "unpleasant – pleasant," "useless – useful," "boring – interesting," "harmful – beneficial," "difficult – easy," "foolish – wise," "unenjoyable – enjoyable," "bad – good," and "stressful – relaxing." using a Likert scale of 1 – 7. Perceived behavioral control and subjective norms were measured with statements about beliefs of personal ability/control and importance/support from others scored on a Likert scale of "strongly disagree – strongly agree." Intention to serve vegetables was asked as an open-ended question (86). Baranowski measured outcome expectations with items that asked participants to indicate the value of various reasons/benefits for the behavior of purchasing fruits and vegetables with a Likert scale of 1 – 5 from "strongly disagree" (1) to "strongly agree" (5) (89). These statements were converted to items associated with packing behaviors and pilot tested with a group on parents (n = 31) to gather evidence of validity (Table 2). Hoelscher developed a series of knowledge questions centered on knowledge of the Food Guide Pyramid at the fifth grade level (90). These items, familiarity with MyPyramid and age appropriate servings sizes for fruits, vegetables and whole grains, were updated to current MyPyramid for Kids information and used in the current questionnaire.

Table 1.2. Behavioral construct items from validated instruments for attitudes, perceived behavioral control, subjective norms, intentions and outcome expectations.

	Reported Cronbach's α	Pilot study Cronbach's α[c]
Attitudes	0.85[a]	0.89
Perceived behavioral control	0.77[a]	0.78
Subjective norms	0.89[a]	0.88
Outcome expectations		
Fruits	0.72[b]	0.69
Vegetables	0.61[b]	0.54
Whole Grains	-----	0.72

[a] Villarubia A. Understanding parents' decisions about serving vegetables to their children. Thesis submitted for Masters of Science Dept. Kinesiology. LSU. 2006

[b] Baranowski T, Watson K, Missaghian M, Broadfoot A, Baranowski J, Cullen K, Nicklas T, Fisher T, O'Donnell S. Parent outcome expectancies for purchasing fruit and vegetables: a validation. 2007;10:280-291.

[c]Briley ME, unpublished, 2007.

Development of a behaviorally-based Parent Education Program

Current programs

Childcare center-based nutrition education programs to date have primarily been carried out in centers that prepare meals and snacks and used the child as the focus of curriculum and measured change. Healthy Start and Hip Hop for Health Jr. were both designed for Head Start Programs (91,92). The Healthy Start intervention successfully combined changes in menu planning and meal preparation with classroom curriculum to significantly decrease the intervention group's saturated fat intake from 11.0% to 8.0% total calories, total fat from 31.0% to >25% total calories, and saturated fat from 12.5% to 8.0% total calories in planned menus over 2 years (91). Hip Hop to Health Jr. combined nutrition and physical activity curriculum with parent newsletters and weekly homework tasks. Outcome measures showed significantly smaller increases in BMI for intervention children compared to control children at both one year follow-up (0.06 vs. 0.59 kg/m^2, P= 0.01) and two year follow-up (0.54 vs. 1.08 kg/m^2, P = 0.02). Further, based on 24 hour recalls with parents the dietary intake of saturated fat was significantly lower for the intervention group, 11.6% of total calories, than the control group, 12.8% of total calories (P = 0.002) (92). A third center-based program is 5-a-Day Preschool Power Plus that combined altering food preparation methods and menus with classroom curriculum and separate parent activities. This program measured the fruit and vegetable intake of the children at meals and snacks consumed at the center before and after intervention. Participating children consumed significantly more fruits and vegetables than those in the control group after the intervention (93). These programs were all conducted in centers that provided food for the children so were not able to directly affect and measure parent behavior.

One program that is designed for childcare centers that require parents to send in lunch is the Lunch Box Program (94). Through one component, five weekly handouts, the program guides the parent through topics associated with packing a healthy lunch. Comparison of sack lunches

in a sample of 32 families before and after delivery of the original *Lunch Box Program* in California demonstrated success for promoting positive changes in the sack lunches including significant increase in numbers of lunches that included whole grain bread and significant decrease in numbers of low-nutrient foods packed in the lunches (33). Similar comparisons at three childcare center in Texas before and after a study of the *Lunch Box Program* supplemented with a workshop for parents showed decreases in whole grain foods packed in the children's lunches, but significant increases in the number of fruits and vegetables (Sweitzer SJ, unpublished, 2006).

Interventions with a behavioral focus have been shown to promote a greater behavioral change compared to knowledge-based interventions (95,96). Further characterization of effective behaviorally-based nutrition education programs would show they are: 1) theory based; 2) address social influences/social norms; 3) address cognitive behavioral skills; 4) train facilitators and 5) are multi-component (97). The *Lunch Box Program* is a single component program with a general message that served as the foundation for building *Lunch Is In The Bag*. *Lunch Is In The Bag* is a multi-component program that is behaviorally-based with focused nutrition messages for parents to pack more fruits, vegetables and whole grains.

Intervention Mapping

The Intervention Mapping™ process provides a framework to guide health educators in building an effective program. The steps and related tasks ensure that literature, theory, and information about the target audience's needs and environmental influences are blended into a theory and evidence-based program (98). Intervention Mapping has been used to design and develop several effective health education programs (98-102). There are six steps in the process with specific tasks within each step. While the steps build on each other, the process is iterative in that educators are encouraged to revisit target audience input, information from literature and theory throughout program development (98).

The first three steps lay the foundation of the program. In step one program developers 1) develop a planning group of potential program participants; 2) conduct a needs assessment that identifies the health and quality of life problems and their causes for the at-risk group; 3) consider the limitations of the community that surrounds the at-risk group; and 4) establish program outcomes based on the needs assessment and planning evaluation (98). To adapt the *Lunch Box Program* an advisory panel of nutrition educators, parents, child care directors, child care licensure and food industry representatives considered the preschool age children to be at-risk and the parent the target audience. The parents' behaviors were evaluated, both healthy and unhealthy, along with their environmental influences, both home and community. The desired healthy parent behaviors that directly affect the children's health or quality of life were identified and molded into measurable program outcomes.

The matrices that are developed in the second step require the program developers to 1) state specific desired program outcomes as changes in behavior or environmental conditions; 2) subdivide these into performance objectives; 3) based on behavioral theory, identify the needed change objective in specific behavioral theory constructs to achieve the performance objectives; and 4) build the matrices of change objectives based on the ecological level (e.g., individual, intrapersonal, organizational, community) (98). In the adaptation of the *Lunch Box Program* the individual performance objectives were parsed into change objectives based on the theoretically driven behavioral constructs. Change objectives were defined for the parents, teachers and children with consideration for home, childcare center or community (e.g., grocery shopping behaviors).

The outcomes of step three are actual pieces that form the program, theory-based methods and strategies. Development of the program parts should be 1) guided by input from members of the target audience; 2) derived from theory-based methods that are in turn linked to targeted behavioral constructs. While several different strategies may support a method, the selected

strategies should match the change objectives (98). In preparation for revising the *Lunch Box Program*, parents described the information and type of delivery that they felt would be most helpful. Guided by the selected behavioral constructs, methods such as images for knowledge, persuasive communication for subjective norms, and modeling for self-efficacy were identified. Persuasive communication suggested strategies like behavioral journalism that may quote other parents. MyPyramid was an image used to impart knowledge. Prepared weekly healthy menus modeled how to pack healthy lunches to help build self-efficacy. Selected strategies were scrutinized for their effect on the change objectives.

The program takes shape in step four through 1) consultation with members of the target audience and potential implementers about strategies and fit; 2) development of program scope, sequence, theme and needed materials; 3) design of documents or protocols and acquisition or creation of materials; and 4) pre-testing the materials with members of the target audience and potential implementers (98). The different components or arms of the revised *Lunch Box Program* were designed with accompanying strategies. Mock ups of the program pieces were developed and presented to groups of parents and child care teachers for critique. The final version was then focus tested with representatives from the target audience.

Step five is development of the plan for adoption and implementation. The first task is identification of the adopters and user. At that point adoption, implementation and sustainability performance objectives for the adopter/user need to be developed. As in step two, matrices are constructed to identify determinants and change objectives for the adopter/user. The change objectives in turn guide the methods and strategies that lead to the design of the intervention as it would actually happen (98). Director interviews at the childcare centers selected for the revised *Lunch Box Program* pilot study provided information about operations. This guided the performance objectives for implementation of the components such as dissemination of the parent handouts or completion of the classroom activities. Determinants that would affect the

ability of teachers to carryout the classroom activities on the scheduled days were identified with accompanying change objectives. Methods and strategies that affected actual implementation of the intervention were created. For example, lunch time was structured a little differently in each intervention center so strategies were developed in order for the "lunch colors" activity to take place easily in each center.

The final step is developing an evaluation plan. Through consideration of the whole program, program developers generate evaluation questions for 1) program objectives; 2) performance objectives; and 3) process outcome. The developers then determine what measures and indicators would show that the program was implemented with fidelity and provided the intended dose with the desired effect (98). Evaluation methods and tools were set in place for the implementation of the revised *Lunch Box Program* to measure program and performance objectives for the teachers, parents and directors. Process outcome measures were collected to determine fidelity and ease of fit.

Chapter 2: How to Help Parents Pack Better Preschool Sack Lunches: Advice from Parents for Educators

Abstract

Objectives: The purpose of this exploratory study was to obtain qualitative input and advice from parents about messages and activities to help pack better sack lunches for preschool children.

Methods: Group structured interviews using standard protocols were conducted with a convenience sample of parents who pack daily lunches for their children. Nominal Group Technique was used to establish consensus about the group's answer to the interview question.

Results: Group interviews (n = 3) were held with parents (n = 31) at 3 child care centers. Based on frequency, four major themes developed: 1) interest in receiving information in written format; 2) activities that stimulate parent interaction; 3) workshops and activity stations; 4) recommendations for support from local supermarkets.

Conclusions: Health educators can incorporate these ideas and suggestions to create programs for this audience and build community relationships with local grocery stores.

How to Help Parents Pack Better Preschool Sack Lunches: Advice from Parents for Educators

Introduction

Childcare is an important portal for behaviorally-based nutrition interventions to promote children's healthy development and support their acquisition of dietary behaviors that prevent obesity and reduce risks for cancer, type 2 diabetes, and other nutrition-related diseases (26,30,36,102). The number of child care facilities in the US has grown from 25,000 in 1977 to more than 119,000 in 2009 (103). Out-of-home care has become the norm for young children with nearly three-fourths (73%) of children ages 3 to 5 and half (51%) of children birth to 2 in regular, non-parental care at least one day per week. More than a third (36%) of US children ages birth to 5 are in center care for an average of 29 hours per week (104). Although the provision of meals and snacks prepared onsite is characteristic of many childcare programs, many others require parents to supply some or all foods for their children to eat during the childcare day. Research in four Western states showed 41% of centers relied on parents to provide at least part of the meals and snacks children consumed and 10% required parents to provide all foods for their child (28). Accuracy of this latter number was reinforced in a telephone survey of childcare centers in two large cities in Texas showing 9% of the centers required parents to provide sack lunches for their children (M. Briley, Unpublished data, 2009).

Packing sack lunches that help young children acquire food preferences and dietary behaviors to support a lifetime of good health is, however, quite challenging. Direct observation of 398 sack lunches at childcare centers in California showed only 16% contained a vegetable and 69% included a fruit or fruit juice whereas more than 80% contained low-nutrient foods such as chips, cookies, and sweetened beverages (94). A similar study of three days of sack lunches for 74 children at centers in Texas showed the majority were deficient in servings of fruits and vegetables relative to the Child and Adult Care Food Program (CACFP) guidelines and failed to

supply one-third of recommended Dietary Reference Intakes for energy, calcium, iron, and other essential nutrients (34). Another study showed lunches sent from home often were at unsafe temperatures with 40% of those containing perishable foods stored at room temperature with no ice pack, only 2% of perishable items were in the safe zone of 40° Fahrenheit (4° centigrade) or less at time of service (105).

Parents of preschoolers are a key source of guidance and feedback for design of interventions to assure that young children's sack lunches and snacks are safe, nutritious, and encourage healthful dietary behaviors. The purpose of this exploratory study was to obtain qualitative input and advice from parents about messages and activities to help pack better sack lunches for preschool children.

Method

Group structured interviews using standard protocols were conducted with a convenience sample of parents who pack daily lunches for their children. The primary question for the interview was "What are the one or two most important messages or activities that would help parents to pack better lunches for their preschool children?" The interviews were conducted at childcare centers after hours in group settings with one facilitator and one recorder. The center directors recruited parents by inviting them to attend the interview. Each parent received a thank-you gift certificate redeemable at local grocery stores. Nominal Group Technique (106,107) was used to establish consensus about the group's answer to the interview question. Thematic analysis of the written materials produced during the interview sessions (i.e., the participants' notes for round-robin and the poster paper records of round-robin and consensus answers) and transcripts of tape recordings of the sessions was conducted. Active written consent was obtained in advance of the group interviews in accordance with the research protocol approved by the Institutional Review Board at The University of Texas at Austin.

Results

A total of three group interviews were held at three childcare centers. Group sizes ranged from 8 to 14 and totaled 31 individuals. Responses to a written survey of demographic characteristics showed each of the groups included males and females with diversity of racial and ethnic backgrounds, family structures, and incomes. They were mothers (80%) and fathers (19%); living with a partner (77%) or as single parents (23%); with one to three children at home; White (55%), Hispanic (36%), and Black (9%); with incomes ranging from less than $20,000 (10%) to more than $100,000 (25%) and education ranging from high school or less (10%) to completion of graduate school (23%). Body Mass Index was in the overweight range (average 27.3 $\pm$ 7.3 calculated from self-reported weight and height).

Each of the group interviews was completed in approximately 90 minutes. Transcripts yielded 109 statements (35 from group one, 27 from group two, and 47 from group three) verified against the written materials and coded for thematic analyses. Themes and key comments supporting them are presented in Table 2.1.

Interest in receiving **information in written format** was a dominant theme. In each of the three interviews, more than 25% of the pieces of advice from the participating parents were in this category. Suggested formats for written information included "send home a little recipe book or a little magnet with 10 easy healthy lunches that you can stick on the fridge so when you get home, you see it;" "give examples or ideas…putting it in the enrollment packet would help a lot;" "little cards in the shape of a slice of bread…with a tip of the day or a sandwich idea [sent home in the child's lunch box];" "put a tip of the day on the door as you walk in so there's always something there that will catch your eye;" "have a fact sheet on serving size—I have no idea about serving size;" and "more literature about statistics on the long term health risks." Indications that parents see the childcare center as a preferred source of written information were requests for "feedback about what our children are eating;" "give us more information so we can

Table 2.1 Themes and key comments from group interviews with parents

Theme 1. Desire for regular written information from the childcare center, particularly recipe ideas and details about nutrients and their connection to health

1.1 More literature; Reminders; Handouts and flyers and little tip cards.

1.2 We need the school to partner with us in this; They should say 'bring four bags of carrots' or 'bring cut up celery' [for snack].

1.3 I'd love for someone to shower me with 10 new ideas; We could say on Friday, 'this is the recipe for the week;' It would be good if the school had recipes.

Theme 2. Interest in activities that stimulate parent interaction such as family fun nights, health fair, "vegetable support group," and recipe exchange

2.1 Talking with other parents…help facilitate us to talk; Educating and learning from each other; If we do it in a group, where there is peer pressure involved, that would help.

2.3 Have a family tasting night with everyone bringing a healthy dish and the recipe…if my children tasted it and I see they liked it, I could just grab the recipe and say, 'OK, this is what we need to add to your lunch.'

Theme 3. Openness to parent workshops and activity stations

3.1 We have parent workshops, so maybe one of them could be about nutrition; Parent night with a speaker coming in and talking about the importance of health and giving us food options.

3.2 A giant piece of paper where everyone could just scribble ideas or recipes or food finds; Parents could make index cards with recipes and then you could shop right off the card.

Theme 4. Desire for support from local food markets to make it easier to pack healthy lunches

4.1 Partner with a market so it is not only from the school but from the market.

4.2 Markets could offer samples or examples of foods that can be offered cold or some recipes.

make changes…parents this day and age need that kind of help from our providers;" "maybe a monthly calendar like a school lunch menu;" but "nasty notes from the teacher doesn't help…keep it positive."

Requests for easy recipes, new ideas for lunch, and information specific to packing vegetables and fruit for lunch accounted for more than 20% of the comments. Parents said "really remind people that it's OK to bring fruits and vegetables [for snack];" "I don't have a problem with fruits and whole grains, but vegetables is hard," "how do I get my child to eat broccoli?" and "maybe a shopping list that shows if you get these things at the store you can make these lunches;" and "I've done a lot of research on cold, healthy, pack-able lunches, but am still struggling to find new ideas." The interview data also included advice about food groups other than vegetables and fruits—e.g., "name five whole grains…that just baffles me right now"— but were comparatively rare, accounting for about 6% of the comments.

Interest in **activities that stimulate parent interaction** was another dominant theme accounting for more than 20% of the pieces of advice in each of the groups. Parents indicated interest in knowing "what other parents pack and does it work?" and "if we all packed the same things in every child's lunch would they eat it better?" and maybe we should "snoop in other children's lunches…I'm sure there are [lunch ideas] I haven't thought of." The perceived importance of social influence and peer pressure was summed up in the comment "If we agreed together, we can do that…if we talk to each other and say, 'you know, we're going to do this' then we can do it."

The parents were open to **workshops and activity stations**. They said "I wish we could do classes;" "a lunch packing symposium;" "a bulletin board where we can post recipes and what your children ate that week;" or "post the empty packages [of healthy foods] and tell where you found them;" and "a hands-on where you show the financial benefits of buying a box of crackers and a thing of cheese and a thing of ham versus buying five [prepackaged product for children]."

The fourth major theme was requests and recommendations for **support from local supermarkets**. Parents said "partnership with markets kind of goes along with sales and coupons and knowing what's around to buy that might be quick and cheap" and "it would help if they had tables with fruit and vegetables that would be good for my son's lunch, at that moment when you have to make the decision to buy good stuff only." These kinds of statements accounted for 10% of the comments. Related themes about dollar and time costs appeared in approximately 9% of the comments and included statements such as "expense is an issue" and "everybody's busy working and they don't have a lot of time for looking in the book…so if you send it out, then I can see and I can do that."

Discussion

Results of this exploratory study show parents want information, guidance, education, and support for packing better lunches for their preschool children. A dominant theme was requests for literature, handouts, and flyers with menu ideas, easy recipes, portion sizes, sources of specific nutrients, and information about nutrition and its connection to health. The childcare center was perceived as a trusted source for nutrition information and guidance that, in addition to written information, could be provided in workshops and educational activity stations at the childcare center. These results are similar to other reports that show large percentage of parents believe health education in childcare centers would improve health knowledge and behavior of preschool children and their families (36).

In addition to information and guidance from the centers, parents also desired opportunities to interact and learn from each other and to have support from local supermarkets. They suggested family recipe exchange, cooking together, and "vegetable support group," and expressed interest in knowing what other parents were packing in their children's lunches. They perceived local stores as being in a position to provide information, recipe ideas, and samples targeted to them as

parents of preschool children, as well as a desire for food markets to make it easier to make healthy, affordable choices at the point of purchase.

Implications

Information from parents about packing lunches for preschool children can be a useful resource for both the nutrition educator and the childcare director. Although a limitation of the current study is its small size and convenience sample, the richness of the qualitative data together with the fact that results complement findings of other research on needs and options for health promotion in childcare settings suggest the utility of the advice obtained. Parents indicated they want information to help them pack better lunches and are amenable to handouts and flyers from the childcare director as well as workshops facilitated by nutrition specialists and activity stations, recipe exchanges or other methods that facilitate parents' talking to and learning from each other. They also would like to see partnerships with local food markets to reinforce nutrition education messages and make it quick, easy, and affordable to pack for their preschool children sack lunches and snacks that are safe, nutritious, and teach healthful dietary habits. This information can guide selection of methods and strategies for future program.

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Chapter 3: A Pilot Study of Lunch Is In The Bag: Increasing Fruits, Vegetables and Whole Grains in Sack Lunches for Preschool-aged Children

Abstract

Fruits, vegetables and whole grains are important sources of nutrients for healthy growth and development of young children. Recent evidence suggests that sack lunches packed by parents for children to consume at childcare centers do not regularly meet the goal of one serving of fruit, vegetables and whole grains. *Lunch Is In The Bag* is a childcare center-based nutrition education program targeted to parents of preschool-age children to increase the number of servings of fruits, vegetables and whole grains in sack lunches sent from home. In a quasi-experimental design, six childcare centers were paired by size before being randomly assigned to intervention (n=3) and comparison (n=3) groups. The parents of caregivers with primary responsibility for preparing the sack lunches of the three to five year old children attending the centers were enrolled as parent-child dyads. The intervention included parent handouts, classroom activities, educational stations and teacher training. The contents of the lunch sacks were recorded for 3 non-consecutive days before and immediately after the intervention to measure the number of servings of fruits, vegetables and whole grains. A total of 132 parent-child dyads completed the study, 81 in the intervention group and 51 in the comparison group. Direct observation of children's lunches from the intervention group showed an increase in predicted mean number of servings of vegetables, from 0.41 to 0.65 ($P < 0.001$) and whole grains, from 0.54 to 1.06 ($P < 0.001$). No significant difference was observed in the mean number of servings of fruit. *Lunch Is In The Bag* which is designed to fit in the childcare environment and targets parents of three to five year old children is a feasible intervention for improving the nutritional quality of sack lunches.

A Pilot Study of Lunch Is In The Bag: Increasing Fruits, Vegetables and Whole Grains in Sack Lunches for Preschool-aged Children

Introduction

Fruits, vegetables and whole grains are key dietary components to maintain healthy body weight, protect against certain cancers, and reduce risk for diabetes and other chronic diseases (10,108-110). Recent development of MyPyramid for Preschoolers by the USDA has established the daily recommendations for fruit and vegetables at one to two cups each and three to five ounces of grains, half which should be whole (5). The Healthy Eating Index scores for the 2003-2004 National Health and Nutrition Examination Survey (NHANES) indicate that children ages two to five years old score 100 for total fruit, 44 for total vegetables, and 17 for whole grains (111).

Parents play an important role as their young child develops dietary habits (68,112). Parents influence children's familiarity with and preferences for fruits, vegetables and whole grains by controlling the availability, accessibility and exposure to those foods (113-116). The child's consumption of fruits, vegetables and whole grains is in turn dictated by their developed food preferences, food availability and accessibility (37,38,115). As the primary caregiver, parents can influence all of the environments where their preschool children encounter meals and snacks.

Childcare centers represent an important dietary environment for reaching parents and children (27,36). Out-of-home childcare has become the norm in the U.S with over 56% of three to four year old children spending time each week in childcare centers (117). Although the majority of childcare centers prepare and serve lunch and snacks to the children in their care, many centers rely on the parents to provide some or all of the child's meals and snacks (28). In a survey of 474 childcare centers in four western states, 41% of the directors indicated some or all of the lunch items were sent from home (28). A 2004 survey of childcare center directors in two Central Texas counties revealed that 89 (46%) of 194 had closed their food service in the previous year in favor of parents supplying lunches (29).

At centers that require children to bring daily sack lunch, lunch becomes an important opportunity for parents to increase their child's exposure to fruits, vegetables and whole grains. Observation of preschoolers' sack lunches indicates, however, that parents need guidance for packing healthy lunches. A study of 222 sack lunches for children ages three to five at childcare centers in Texas showed only 29% of the lunches provided adequate servings of fruits and vegetables based on the age-appropriate standards for the Child and Adult Care Feeding Program (CACFP), and less than half (40%) of the children had lunches whose 3-day average would meet the criterion of providing one-third of the Dietary Reference Intakes (DRI) for essential nutrients including energy, dietary fiber, vitamin A, calcium, iron and zinc (34). An earlier evaluation of 528 sack lunches packed for preschool children attending childcare programs in California showed only 16% contained a vegetable and substantially less than three-fourths (69%) contained a fruit or fruit juices whereas more than 80% contained low-nutrient foods (e.g., chips, cookies, and fruit drinks) (35).

The current study was a pilot-test of a center-based program to encourage parents of preschool age children to pack one serving each of fruits, vegetables, and whole grains every day in sack lunches sent from home. Social cognitive theory (118) and the theory of planned behavior (119) guided needs assessment, and Intervention Mapping™ was used to revise an existing series of handouts for parents (94) and add behaviorally-based activities for parents, children and childcare teachers with an emphasis on increasing fruit, vegetable and whole grain in children's sack lunches. The hypothesis of this study was that at five week follow-up, parents of children in childcare centers with the 5-week multi-component *Lunch Is In The Bag* program would pack significantly more servings of fruit, vegetable and whole grain products compared to parents of children in childcare centers without the program.

Methods

Participants

Six licensed childcare centers in and near a metropolitan city in central Texas participated. Enrollment criteria were: (1) licensed by the state agency that oversees childcare centers, (2) provided care for a minimum of 20 children ages three to five enrolled and participating in daily care at the center, (3) provided care for children during the hours when children eat their lunch, and (4) required children to bring their lunches from home. All families of three to five year old children (n=368) attending the childcare centers were invited to participate. Directors of the centers were provided a letter of explanation that included a draft statement of their endorsement of the program to distribute to the parents the week before recruitment. The enrollment criterion for families was one parent-child dyad per family, with the caveat that the parent or caregiver in the dyad was the primary preparer of the child's lunch. Parents received $10 and $30 gift cards for participating in written survey and group interview. Teachers received a $50 gift card for participating in a group interview. The Institutional Review Boards of The University of Texas at Austin and the University of Texas Health Science Center at Houston approved the study in accord with guidelines for human participants in research. Parents provided written consent for themselves and their children in advance of lunch observations, survey, and group interview.

Study Design

In a quasi-experimental design, the six centers were paired by size before being randomly assigned to an intervention (n=3) or comparison (n=3) group. The eleven week timeline at each center included one week of recruitment and collection of demographic information, two weeks of lunch observations, five weeks of either intervention or no intervention, two weeks of follow-up lunch observation and one week of debriefing. Process evaluation included (1) implementation activity logs (see page 84), (2) written surveys (see page 94), and (3) group interviews. All of the parents and children at the intervention centers received the entire program while only enrolled parent-child dyads participated in study.

Intervention components

Lunch Is In The Bag was adapted from the parent education handouts, the *Lunch Box Program (LBP)*, a series of 5 colorful brochures designed to help families pack healthy sack lunches for their preschool children (94). Program development was guided by Intervention Mapping™ (98), concepts from the theory of planned behavior and social cognitive theory, formative data from previous group interviews with parents and teachers at other childcare centers, and consultation with an Advisory Panel that included the *LBP* author, childcare directors and parents of preschool children, representatives from childcare licensing and the food industry assisted. The program development team used a Dissemination Planning Template (120) to identify feasibility issues, outline the adaptability plan (e.g., tailoring materials for cultural differences), and anticipate elements of programmed support for implementation. The research plan included evaluation of input, process, and outcomes.

The five week *Lunch Is In The Bag* program as implemented in the current study included:

- Parent Handouts (see page 100) – weekly topical handouts that combined nutrition information, menu and recipe ideas, goal-setting activities, and social reference. The focal message encouraged packing healthy and safe lunches to include at least one serving from the fruits, vegetables, whole grains, meat & beans, and dairy groups every day.
- Classroom Activities (see page 142) – weekly classroom activities that followed the topics of the handouts and combined art and crafts, reading and bringing specific foods from home. Notes describing the upcoming week's classroom activities were sent home to the intervention center parents to promote participation and prompt conversation between the parent and child.
- Educational Stations (see page 160) – weekly stations that were set up three days each week during the last pick up time. They followed the handout topics and provided parent

and child behaviorally-based activities and strategies to encourage sharing of ideas among parents as well as reinforcement of the nutrition messages the child had experienced in class.

- Training and information for classroom teachers to enable and encourage high fidelity implementation of the classroom component and encourage their acceptance and endorsement of the handouts and educational activity stations.

Measures of Input

Characteristics of the participating childcare centers and families were measured with written questionnaires and interviews. Interviews with childcare directors described size and constituency of the childcare centers as well as background information about childcare program philosophy and nutrition policies and practices at the center. Questionnaires for parents provided self-report on familial factors that have been shown to affect children's dietary intake such as parent Body Mass Index (BMI), household size, parent ethnicity, household income and parent education level (68,121-124).

Process Evaluation Methods

Multiple methods were used to measure implementation and acceptability of the program components. Mailing list and documentation by the center director tracked dissemination of the parent handouts (see page 89). Teachers documented classroom activities in a weekly log. Educational Stations were staffed by research team members who documented parent and child participation with pre-coded checklists (see page 82 and 92). Teacher training was documented with an event log at each intervention childcare center prior to parent recruitment. Parents, teachers and directors at the intervention centers completed written evaluation forms and participated in group interviews after the conclusion of the follow-up lunch observations.

Primary Outcome Measurement

The primary outcome measure was the number of servings of fruits, vegetables and whole grains in lunches children brought from home. Direct observation of the packed food items were recorded by trained observers at both intervention and comparison centers. In accord with reliability for food records (125,126) lunches were observed on three random non-consecutive days (see page 90). Food observers (n=5) were trained with a research-based protocol (127) modified by training the observers to recognize foods and servings sizes commonly seen in lunches of preschool children (34). Individual components of composite foods were recorded in separate amounts. The observers used a priori scales and checklists to document on a Food Observation Record each food item, the amount, and how the food was packed, prepared and presented to the child. This tool has been used in previous research observing meals served by childcare centers and sack lunches sent by parents in childcare settings (124,128). The food items were classified by food group and age appropriate serving sizes based on CACFP guidelines (e.g., one fourth cup vegetables for three year olds and one half cup vegetables for four to five year olds) (129).

Statistical Analysis

A three-level regression model was used to test the hypotheses that the lunches for the children in the intervention group would contain more servings of fruits, vegetables and whole grains than those in the comparison group. The model was fitted to the data by the method of maximum likelihood using the Stata software package (Stata Version 10.1, 2009, StataCorp, College Station, TX). Parent BMI, household size, and parent ethnicity were used as covariates. The Statistical Package for Social Sciences for Windows (SPSS, version 13.0, 2005, SPSS Inc, Chicago, IL) was used for the descriptive analyses of the input and process data.

Results

Demographic characteristics of participants

Of a total of 368 parent/child dyads in the six centers, 132 (35.9%) enrolled in the study. The family participation rates in the two groups of centers were not significantly different, but because the population of families eligible to participate in the study was slightly larger in the intervention group (Table 2.1) the absolute numbers of parents was larger for the intervention group (n=81) than for the comparison group (n=55). The centers ranged in size from 24 to 125 three -five year old children.

There were no significant differences between the intervention and comparison groups in demographic characteristics of the participating families. The majority was mothers with a mean age of 36.7 years; at least 90% in each group were married. Average BMI (24.1 based on self-reported height and weight) is considered within a healthy range. With 90% married, more than 50% having completed some or all of graduate or professional degree, and more than 50% reporting annual household income greater than $100,000, the group was on the high end of socioeconomic status compared to census figures for Texas as a whole, In the state of Texas 57% of children under six years old in childcare come from two parent families with a median income of $66,653 (129).

Results from Process Evaluation

Mailing lists documented 100% handout mailing to all participating parents. Center staff verified that handouts were sent home to all parents of three to five year old children through each intervention center's communication system (e.g., Friday folders). Based on post-program parent survey, 97% of the respondents had received all five handouts through at least one method of dissemination, and 100% indicated reading from some to all of the handouts. All lead teachers at intervention centers received training. Classroom Activity Logs indicated 100% compliance with implementation of classroom activities. Educational stations were held for 98% of the

Table 3.1 Characteristics of study population for *Lunch Is In The Bag*.			
	Comparison	Intervention	Total
Number of centers	3	3	6
Number of children in centers	155	218	373
Number of children in study	51	81	132
Number of observations[a]	298	471	769
Average people in household ± SD	3.96 ± 1.03	3.71 ± 1.1	3.9 ± 1.1
Average children in household ± SD	1.94 ± 0.8	1.75 ± 0.8	1.9 ± 0.8
Number of caregivers in study (%)	47 (37)	80 (63)	127 (100)
Female	39 (38)	63 (62)	102 (80)
Male	8 (32)	17 (64)	25 (20)
Average age of caregiver ± SD	36.69 ± 8.2	36.56 ± 8.2	36.7 ± 8.1
Average BMI of caregiver ± SD	23.79 ± 4.9	24.62 ± 5.7	24.1 ± 5.2
Education of caregivers in study (%)	81 (64)	46 (36)	127 (100)
High School or less	0 (0)	1 (100)	1 (1)
Some college or post high school	5 (56)	4 (44)	9 (7)
College graduate	29 (55)	24 (45)	53 (42)
Some graduate/professional school	4 (33)	8 (67)	12 (9)
Graduate/professional degree	43 (83)	9 (17)	52 (41)
Annual household income (%)	46 (39)	73 (61)	119 (100)
$20,000 - $40,000	2 (100)	0 (0)	2 (2)
$40,000 - $60,000	3 (60)	2 (40)	5 (4)
$60,000 - $80,000	7 (37)	12 (63)	19 (16)
$80,000 - $100,000	5 (31)	11 (69)	16 (14)
> $100,000	29 (38)	48 (62)	77 (65)
Ethnic background (%)	46 (37)	78 (63)	124 (100)
Asian or Asian American	2 (8)	23 (92)	25 (20)
Other	6 (43)	8 (57)	14 (11)
White European American, non-Hispanic	38 (45)	47 (55)	85 (67)
Marital Status (%)	47 (32)	80 (68)	127 (100)
Married	43 (38)	74 (62)	117 (92)
Not Married	4 (40)	6 (60)	10 (8)
Relation to child (%)	47 (32)	80 (68)	127 (100)
Mother	39 (39)	62 (61)	101 (80)
Father	8 (33)	16 (67)	24 (19)
Grandparent	0 (0)	2 (100)	2 (2)
[a] Numbers for different outcome measures may vary due to missing values.			

scheduled days. Parent/child reaction aggregated across the various elements of stations averaged 4.4 on 5 point scale with 5 being appreciative and 1, denigrating. The majority of parents that participated in group interviews reported enjoying the program and it fit well within their family routine. The teacher surveys indicated 75% felt the program fit well in both curriculum and environment. Teachers that participated in group interviews indicated an appreciation for developed curriculum and noted increased conversations between parent and child about nutrition.

Food Observation Results

The children's sack lunches were observed at baseline and follow-up six weeks later, immediately following the intervention period, at six centers for a total of 769 observations. The variability as determined by the three-level regression models in the number of servings of fruits, vegetables and whole grains associated with centers, subjects and observations is presented in Table 2.2. For all three food groups the largest proportion of variance occurred between observations or individual lunches: 58% for fruits, 71% for vegetables and 88% for whole grains. Less than 2% of the total variance was attributable to variation between centers, so in subsequent analyses, only level 1 (within children) and level 2 (between children) were used in the models. It was also determined that neither BMI, number of persons in household nor ethnic status were significant covariates for the servings of fruit, vegetables and whole grains.

Graphical analysis showed that the level 1 and level 2 residuals for fruits were approximately normally distributed. The level 1 residuals for vegetables were fairly normal, but the level 2 residuals showed some evidence of non-normality. For whole grains, the level 1 residuals showed somewhat non-normal distributions, while the level 2 residuals were almost normal in distribution.

Table 3.2 Predicted number of servings of fruits, vegetables and whole grains in Intervention and Comparison groups at follow-up, corrected for differences at baseline; amount and proportion of variance due to centers, children and repeated observations (769 observations on 131 subjects at 6 centers).

	Fruit	Vegetables	Whole Grains
Comparison Baseline			
Number of observations	148	148	148
Mean (SE)	1.246 (0.157)	0.683 (0.085)	0.479 (0.177)
95% Confidence Interval	(0.939 - 1.553)	(0.516 - 0.850)	(.133 – 0.825)
Comparison Follow-up			
Number of observations	150	150	150
Mean (SE)	1.128 (0.156)	0.579 (0.085)	0.516 (0.176)
95% Confidence Interval	(0.821 – 1.435)	(0.413 - 0.746)	(0.171 - 0.862)
Intervention Baseline			
Number of observations	240	240	240
Mean (SE)	1.804 (0.145)	0.412 (0.070)	0.541 (0.170)
95% Confidence Interval	(1.521 – 2.088)	(0.276 - 0.549)	(0.209 - 0.874)
Intervention Follow-up			
Number of observations	231	231	231
Mean (SE)	1.751 (0.145)	0.652 (0.070)	1.066 (0.170)
95% Confidence Interval	(1.466 – 2.036)	(0.515 - 0.790)	(0.732 – 1.400)
Intervention - Comparison at follow-up			
Mean (SE)	0.065 (0.124)	0.344 (0.100)	0.487 (0.152)
p – value	0.600	0.001	0.001
95% Confidence interval	(-0.177; - 0.307)	(0.148; - 0.540)	(0.188; - 0.786)
Variance (proportion)			
Between centers	0.002 (0.002)	0.000 (0.000)	0.023 (0.019)
Between children	0.495 (0.419)	0.187 (0.293)	0.123 (0.102)
Between observations	0.686 (0.578)	0.451 (0.707)	1.052 (0.879)
Total	1.183 (1.000)	0.638 (1.000)	1.198 (1.000)

Two-level regression models with level 1 (within children) and level 2 (between children) were used in the final analyses. To partially compensate for the biases due to non-normality of the residuals, a robust (Huber/White or sandwich) estimator of the covariance matrix was used.

Table 2 also presents the difference in Intervention and Comparison groups at follow-up in number of servings of fruits, vegetables and whole grains, corrected for difference at baseline derived from the interaction term for time and intervention group in the regression models. The interactive effect of intervention and time for number of servings of fruits was not significant ($p = 0.600$); however, there was a significant effect due to the intervention ($p = 0.009$). Both vegetables and whole grains showed a significant interactive effect of intervention and time ($p = 0.001$ and $p = 0.001$, respectively).

The predicted mean number of servings of fruits, vegetables and whole grains, standard errors and 95% confidence intervals for the intervention and control groups are displayed in Table 2. Both the intervention and comparison groups showed a slight decrease in mean number of servings of fruits between baseline and follow up, -0.05 servings for intervention and -0.12 for the comparison. The mean numbers of servings of vegetables for the intervention group increased (0.24) while the mean number of servings for the control decreased (-0.10). The number of servings of whole grains increased in both groups; strongly in the intervention group (0.52) and just marginally in the control (0.04).

Discussion

The results of this study show that implementing *Lunch Is In The Bag* at the childcare center is a feasible strategy for improving the nutritional content of parent-packed preschool sack lunches. Follow-up lunch observations five weeks after baseline showed a significant increase in servings of vegetables and whole grains at the intervention centers compared to the comparison centers. Regular classroom teachers were able to implement the weekly activities as planned and provided positive feedback about the fit of the program into the childcare center. The majority

of parents received and used the handouts. Parents and children were seen to enjoy their interaction with the educational stations.

Fruit exceeded the targeted outcome of one serving at both baseline and follow-up for both the intervention and comparison groups. This result may be due to a parental norm of providing fruit for children's lunch, the availability of fruit in a form easy to pack, or the fact that children readily consume fruit. For example, busy parents have a varied selection of individually portioned fruit, and 100% fruit juice items are available at grocery stores that are easy and safe to pack. Children have demonstrated a preference for fruit and fruit juice over vegetables (38) which may suggest that parents perceive the children's preference for fruit and fruit juice so are more likely to pack those foods in their child's sack lunch.

Vegetables were included less often in children's sack lunches. The mean number of servings of vegetables increased significantly post-intervention to slightly more than half a serving, but remained less than the goal of one serving. While small (about two tablespoons) this increase can provide key nutrients as well as model vegetables as an important part of a healthy lunch for a child. As noted above, parents may be less likely to pack vegetables based on their perceptions of the child's food preference. Other barriers may include parents' consideration of vegetables as too costly and/or too time and labor intensive to pack regularly for a child who may not eat them, (131-133).

The mean number of servings of whole grains increased to the goal of one serving per day at intervention centers. As with fruit, whole grain items can now be readily purchased in prepackaged forms, such as granola bars, or can be placed in a plastic bag and kept safely at room temperature such as ready-to-eat cereal or crackers. Parents of primary school-aged children have suggested that their knowledge of how to identify whole grain products in the grocery store is limited (134). Parents at the intervention centers may have recognized through

the Handouts, Activity Stations, and/or conversation with their child that they had convenient and acceptable options to regularly pack whole grains in the child's lunches.

Implications

Other studies of multi-component programs focused on changing what the preschool child eats for lunch at the childcare center are *Healthy Start* and *5-A –Day Preschool Power Plus* (91,93), both of which included a component focused on changing the menus/preparation methods of meals prepared at the childcare center. *Healthy Start,* designed to reduce dietary fat, resulted in a significant decrease in the total serum cholesterol among the intervention group compared to the control group. The *5-A-Day Preschool Power Plus* program demonstrated a significant increase in consumption of servings of fruit and vegetables as well as dietary fiber. While both of these programs demonstrated a change in children's consumption, it was primarily based on changes at the center not as a direct result of parents' behavior as in our study.

The components used in this study were designed for centers without meal preparation and were both effective and easily introduced into the curriculum and operations of intervention centers. Parents have indicated a willingness to receive nutrition information, such as handouts, from childcare centers (36). In this study each center's current communication methods were successfully employed to disseminate the handouts. Research has also shown that children can affect the home food environment through asking behaviors (135,136). Simple classroom activities that engage the child by designating a favorite fruit day or highlighting colored vegetables in lunches prompt both the child to ask for specific foods and the parents to respond through packing behaviors. Classroom activities and educational materials work together to change parent behavior that can be directly measured by the contents of the sack lunch. While *Lunch Is In The Bag* has demonstrated positive changes in observed lunch sacks, further study is needed to determine which specific program strategies had the greatest effect on parent's behavior.

The current study had several limitations which are offset by its several strengths. A major strength of this study was the use of direct observation of lunches as a direct objective measure of change in parent behavior. Another strength was the use of childcare centers that varied in both size and philosophy. Each intervention center was able to incorporate the program into their current practices with minimal disruption or change. A limitation is the small number of centers in this pilot study which may have contributed to the homogeneity of the study participants. The data presented here show the feasibility of the program and demonstrate its readiness for an efficacy trial. The current study focused on the change in the contents of the sack lunches without determining if there was a corresponding change in the child's intake or in the nutrition environment in the home. Further implementation of the program should include investigation of both of those aspects.

The multi-component program *Lunch Is In The Bag* program which is designed to fit the environment of childcare centers as a portal for reaching parents is a feasible intervention for improving the nutritional content of lunches parents pack for their preschool children. In view of current public health concerns for childhood obesity, registered dietitians would find a receptive audience among parents of young children and an environment within the childcare center that allows access to groups of parents. An opportunity also exists to work with the food industry to develop more individually portioned vegetable choices for packing in sack lunches. A behaviorally-based intervention such as *Lunch Is In The Bag* allows linkage of nutrition information with strategies that encourage practice of the healthy behaviors. The increases in number of servings of vegetables and whole grains were shown to be significant and preliminary process evaluations indicate the program was compatible with childcare settings. It is reasonable to assume that establishment of standards for inclusion of one serving of fruits, vegetables and whole grains each day in a child's sack lunch can have a major impact on the health and well being of America's young children.

Chapter 4: Psychosocial Outcomes of Lunch Is In The Bag, a Parent Program for Packing Healthy Lunches for Preschool Children

Abstract

Objective: To determine the effects of *Lunch Is In The Bag* intervention on selected behavioral constructs and their predictive relationship on lunch packing behaviors of parents of preschool-aged children.

Design: Quasi-experimental pre-post design with pair-matched random assignment of childcare centers to Intervention and Comparison group.

Setting: 6 childcare centers in Central Texas

Participants: 131 parent-child dyads with children aged 3-5 years.

Variables measured: Number of servings of fruit, vegetables and whole grains; parent knowledge, expectations, self-efficacy/ perceived behavioral control, subjective norms and intentions for packing the target foods.

Analysis: Hierarchical linear regression analyses. $p < 0.05$ was considered significant.

Results: Mean increases in number of servings of vegetables (0.24, $p = 0.001$); whole grains (0.52, $p = 0.001$); knowledge ($p = 0.010$); expectations for whole grains ($p < 0.001$); and subjective norms for fruit ($p = 0.002$), vegetables ($p = 0.046$), and whole grains ($p = 0.015$) Self-efficacy/perceived behavioral control, expectations, and intentions were significant predictors for packing vegetables; knowledge significantly predicted packing whole grains.

Conclusions and Implications: *Lunch Is In The Bag* is a feasible theory-based multi-component intervention for use in childcare settings to improve the lunch packing behaviors of parents of preschool aged children.

Psychosocial Outcomes of *Lunch Is In The Bag*, a Pilot Program for Teaching Parents to Pack Healthy Lunches for Preschool Children

Introduction

Lack of fruit, vegetable and whole grain in preschoolers' sack lunches is a serious concern because these foods have been identified as critical to healthy growth and development, maintenance of healthy weight, and prevention of certain cancers, diabetes and other chronic diseases (109,110,137). Only 48% of American preschool-aged children consume the recommended number of servings of fruits and vegetables (138). The average intake of whole grain foods of young children and adolescents is less than one serving per day, far short of the U.S. Dietary Guidelines recommended three servings per day or half of all servings of grains (139).

The daily preparation of sack lunches is a perfect opportunity for parents to provide regular exposure to fruits, vegetables, and whole grains for their preschool children, thereby encouraging the acquisition of food preferences and dietary habits to support a lifetime of good health. The preschool years are a key period when children establish food preferences, become able to accurately discern between healthy and non-healthy foods, and acquire dietary habits that track into their later years (68,38,140). Given that more than 75% of US children regularly spend at least one day a week in out-of-home care (141), the childcare center is a good setting for behavioral interventions to increase exposure to, preference for, and intake of fruit, vegetables, and whole grains (27,30,36).

Because parents serve as gatekeepers for preschool children's dietary intake by providing sack lunches, it is important to target intervention efforts to parents. Several studies that have evaluated adult consumption of fruit, vegetables, and whole grain based on the Theory of Planned Behavior (TPB) (119) or Social Cognitive Theory (SCT) (118) have shown outcome expectations, perceived norms, and other psychosocial factors to be significant predictors of

dietary intentions and behavior (74-76,80,82,142). For example, Havas demonstrated that an increased consumption of fruit and vegetables among WIC mothers was directly related to increased knowledge, self-efficacy and attitudes (84). Gibson found that the mothers' nutrition knowledge, frequency of fruit consumption and attitude about the health benefits of the children's consumption of fruit and vegetables were independent predictors of the children's fruit intake while attitude toward health benefits predicted the children's vegetable consumption (85), while Villarubia found parents' attitudes had the strongest relationship to their intentions to serve vegetables to their third to fifth grade children, followed by perceived behavioral control and subjective norms (86). Villarubia found intentions and perceived behavioral control had the greatest influence on the behavior of serving vegetables to their children. Despite these studies, to our knowledge, TPB and SCT have not been applied to studies in the childcare setting targeting parents packing fruit, vegetable and whole grain foods in sack lunches for their preschool age children.

To enable and encourage parents to pack better sack lunches for their preschool children, the *Lunch Is In The Bag* program was developed using TPB and SCT (118,119) as a framework. The expected primary outcome was that after exposure to *Lunch Is In The Bag,* parents would pack at least one serving each of fruits, vegetables and whole grains in preschool sack lunches each day. The program consisted of brief behaviorally-based activities presented to parents through a series of handouts for parents originally developed by the Agricultural Extension Service in San Luis Obispo, California (87), classroom activities for the children, and parent-child activity stations at the childcare center over a five-week period (SJ Sweitzer, under review, 2009). Theory-guided proximal objectives for the *Lunch Is In The Bag* program were to increase (1) knowledge about how to pack nutritious, safe, and appealing lunches; (2) expectations that packing fruit, vegetable and whole grains will please children and protect them from disease later in life; (3) self-efficacy/ perceived behavioral control for packing lunches that include a serving

of fruit, vegetable, and whole grain every day; (4) subjective norms about packing fruit, vegetable and whole grain foods every day; and (5) intentions to include a serving each of fruit, vegetable, and whole grain in the child's sack lunch every day.

The purpose of this study was to determine the effects of *Lunch Is In The Bag* on psychosocial antecedents of lunch packing behaviors. Specifically, this study evaluated achievement of the proximal objectives of the intervention. Second, this study examined the extent to which the psychosocial variables were useful as predictors of parents packing fruits, vegetables, and whole grains in the children's sack lunches.

Methods

Participants

Participants were recruited from six licensed childcare centers in a metropolitan area in Central Texas. Inclusion criteria for centers were: (1) state licensure of the center, (2) minimum enrollment of 20 children ages 3 to 5, (3) care for children during lunchtime, and (4) a requirement for children to bring their lunches from home. All families of 3-5 year old children (n=368) attending the selected childcare centers were invited to participate. Directors of the centers were provided a letter of explanation that included a draft statement of their endorsement of the program to distribute to the parents the week before recruitment. Enrollment criterion for the families was participation of one parent-child dyad per family, with the caveat that the "parent" member of the dyad was the primary preparer of the child's lunch. The Institutional Review Boards of both The University of Texas at Austin and The University of Texas. Parents provided written consent before participating in the study activities.

Study Design

In a quasi-experimental design, the centers were paired by size then randomly assigned to either an intervention (n=3) or comparison (n=3) group. Data were collected at baseline and again at follow-up six weeks later (i.e., before and after the 5 week intervention). Primary

outcome measures were servings of fruit, vegetable and whole grain packed in the children's lunches. Proximal outcome measures were parent knowledge; expectations, self-efficacy/ perceived behavioral control; subjective norms; and intentions.

Intervention components

Lunch is in the Bag is a program for parents designed to be compatible with childcare centers requiring lunches to be brought from home. The core component at the individual level is a series of weekly topical handouts sent home to the parents to educate, motivate, and provide a ready reference for packing lunches that are nutritious, safe, and appealing. Classroom activities for the child (e.g., building a "Great Grain Train" around the classroom walls by bringing from home empty boxes of whole grain products) and weekly Educational Activity Stations for parents and children together are core components at the interpersonal level to reinforce healthy lunch packing decisions and behaviors. The components were designed to fit into the childcare centers' current method of communication with parents, classroom curriculum and pick-up time logistics. An implementation calendar that detailed the program activities for five weeks in the fall, an intervention kit that included materials for parents, educational stations, classroom lessons, and training of teachers and other childcare personnel were core components at the organizational level to assist the center in providing leadership and support for parents packing healthy sack lunches for their preschool children. Materials were developed for sixth grade reading competency (143). Cultural competence of the content and imagery of the materials was evaluated and guided by an Advisory Panel and focus group testing by parents. The intervention strategies for the program were drawn from TPB and SCT and are summarized in the logic model presented in Table 4.1.

Table 4.1. Logic Model for Lunch Is In The Bag		
Intervention Strategies	Behavioral Constructs Addressed	Intervention component
Information about appropriate meal patterns and serving sizes for packing preschool lunches	Knowledge	Handouts weeks 1, 3, 4, 5 color-coded weekly lunch menus with 5 food groups
Motivational messages about the benefits of packing fruits, vegetables, and whole grains in preschool lunches	Expectations	Handouts 1 through 5 emphasizing disease prevention for children, and incorporating behavioral journalism stories from parent peers. Posters with motivational messages.
Simplified lunch menu pattern for parents to follow. Activities to recognize current strengths and provide practice and assurances that packing more fruits, vegetables, and whole grains is easy, affordable, and achievable using the lunch menu pattern	Self-efficacy/Perceived Behavioral Control	Handouts 1 through 6 Lunch Star game for parent to play with the child at the educational station to 'pack a good lunch'. Comparative shopping tips and suggestions to "try something new" assignment for parents to encourage step-wise changes in shopping and packing behaviors. Suggestion for parent and child to be "vegetable explorers" to try new vegetables.
Social references to legitimize recommended meal patterns and role model stories that parents can emulate to increase the number of servings of fruits, vegetables, and whole grains in their preschool child's lunch sack	Subjective Norms	Handouts 1 through 6 Behavioral journalism stories of parents packing appropriate lunches. Classroom activities that request parents send in child's favorite fruit, vegetable and whole grain
Suggestions and tools for setting specific, challenging, achievable goals for packing more servings of fruits, vegetables, and whole grains	Intentions	Handouts weeks 3, 4, and 6 Goal setting activity for parents; reinforcements
Reminders, rewards and cues to reinforce positive changes	Behavior	Lunch superstar certificates to send home to recognize excellent lunches during specific weeks. Child ask for "colored fruit and vegetables for their lunch

Measurement

The two data sources for this study were questionnaires completed by the parents and direct observation of foods packed in the children's lunch sacks at baseline and at follow-up. Demographic data for the parents were obtained in the baseline questionnaire.

Observations of the children's lunches were conducted using an empirically grounded protocol (30,43,126,143) adapted for recording the content of preschoolers' parent-packed sack lunches. The lunch contents of participating children were recorded by trained observers on 3 random non-consecutive days to account for variability in foods packed (127,128).

Questionnaires were adapted from published survey instruments (86,89,90) with additional items developed by the study investigators (see page 73). Psychosocial variables were measured separately for fruits, whole grains, and vegetables with response option on 5-point Likert-type scales, with the exception of the seven multiple choice knowledge items. To facilitate comparisons across the scales, item scores were expressed as percent of range on the raw score scale. The questionnaire was pilot tested at 3 childcare centers. For this study, internal consistency of each of the scales was evaluated using all of the parent responses to the questionnaire at baseline.

The questionnaire was self-administered. To ensure the questionnaire data set contained records for only those parents who understood and willingly followed the self-administration instructions, the quality assurance criterion specified that no more than 12 of the psychosocial items were missing on any one questionnaire. The final dataset included baseline questionnaires from 119 parents and follow-up questionnaires from 104 parents.

Knowledge. The raw score scale was number of correct answers of seven multiple choice questions matched to MyPyramid guidelines for children (90).

Expectations. A Likert scale was used for 8 of the 12 items ("strongly agree" to "disagree strongly.") The stem was "I like to pack [target food] because" and the item definitions included

such statements as “they are good for health,” “they taste good,” and “they are inexpensive” (89). The other four items asked the parents to evaluate the act of packing one serving of the target food on semantic differential scales with anchors harmful-beneficial, foolish-wise, unpleasant-pleasant, and stressful-agreeable (86). Internal consistency statistics based on parent responses at baseline were $\alpha = 0.76$ for fruit, $\alpha = 0.71$ for vegetables, and $\alpha = 0.80$ for whole grains.

Self-Efficacy/ Perceived Behavioral Control. Because self-efficacy and perceived behavioral control are similar constructs (87,88), they were grouped together for these analyses. One of the six items had a Likert-type response scale to indicate if the parent “could easily pack [target food] if I wanted to;” two were semantic differential with anchors very little control – complete control and extremely difficult – extremely easy; and three were on scale with anchors “very sure I cannot” to “very sure I can” regularly “tell my child I like [target food],” “encourage my child to eat [target food]”, and “insist my child try a bit of a new [target food]”(86,89). Internal consistency statistics were $\alpha = 0.57$ for fruit, $\alpha = 0.70$ for vegetables, and $\alpha = 0.81$ for whole grains.

Subjective Norms. Four of the five Likert-type items asked parents to indicate whether other people (e.g., the child’s teachers) think the parent should pack one serving of the target food in the child’s sack lunch every day, while the fifth item asked whether “people who are important to me support my packing one serving of [target food]” (86). Internal consistency statistics were $\alpha = 0.74$ for fruits, $\alpha = 0.66$ for vegetables, and $\alpha = 0.83$ for whole grains.

Intention. Parents were asked to record the number of servings of [target food] they intended to pack in their child’s lunch every day. Because parents often responded with a range, the coding rule was to round down to the nearest half serving--e.g., if the parent wrote “one or two,” a value of 1.5 was entered in the database.

Behavior. Contents observed in the children’s lunch sacks were classified by food group and coded for age appropriate serving size based on MyPyramid for Kids (1). The parents’ daily

lunch packing behavior was measured as number of servings of fruits, vegetables and whole grain foods in the children's sack lunches.

Statistical Analysis

In this study, for each participating family, the child's lunch sack was observed on three days at baseline and three days at follow-up. Families were selected from three childcare centers in the comparison group and 3 childcare centers in the intervention group resulting in a three-level hierarchical data structure with observations clustered within families and families clustered within centers. Three-level regression models were used to analyze the primary behavioral and proximal psychosocial outcomes and examine the extent to which the psychosocial variables were useful as predictors of the parents' behavior of packing fruits, vegetables, and whole grains in the children's sack lunches. The models were fitted to the data by the method of restricted maximum likelihood (REML), and the means and standard errors of the four treatment-time combinations were calculated for each outcome. Analyses were conducted using Stata (Stata Version 10.1, 2009, StataCorp, College Station, TX).

Results

The final study sample consisted of 132 parent-child dyads, with 81 pairs at the intervention centers and 51 pairs at the comparison centers. The majority of the parents were mothers, with mean age of 36.7 years and self-reported height and weight indicating a mean body mass index (BMI) of 24.1 (within healthy range). Many participants were college graduates (40.2%). Over 50% had completed some or all of a graduate or professional degree, and 60.6% had household income greater than $100,000.00. There were no significant differences between demographic characteristics in the intervention and control groups.

Primary behavioral outcomes

As previously reported (SJ Sweitzer, under review, 2009) analysis of amounts of the target foods packed in the children's lunches on 3 non-consecutive days showed a significant increase

from baseline to follow-up in the number of servings of vegetables and whole grain items. Increase in vegetables averaged 0.24 servings ($p = .001$), increase in whole grains averaged of 0.52 servings ($p = .001$), and the mean number of servings of fruit did not change significantly. Means and standard deviations are shown in Table 4.2.

Proximal psychosocial outcomes

Significant interactive effects of time (baseline versus follow-up) and treatment (intervention versus comparison) on knowledge ($p = 0.010$); on expectations for whole grains ($p < 0.001$); and subjective norms for fruit ($p = 0.002$), vegetables ($p = 0.046$), and whole grains ($p = 0.015$) were obtained. Post-hoc tests showed expectations for vegetables was significantly greater at follow-up than at baseline for the intervention group ($p < 0.002$) although there was no significant interactive effect of time and treatment. There was no significant interactive effect of time and treatment on self-efficacy and perceived behavioral control or on intentions for any of the target foods. Means and standard deviations for the psychosocial variables are shown in Table 4.2.

Psychosocial predictors of behavior

Data in Table 4.3 show the amount of vegetable parents packed in their child's lunch sack increased an average of 0.05 servings for each unit of increase in parent's vegetable self efficacy and perceived behavioral control ($p < 0.001$); 0.02 servings for each unit of increase in the parent's vegetable expectations ($p = 0.007$); and 0.009 servings for each unit of increase in parent's intentions to pack vegetables ($p < .05$). The amount of whole grains parents packed in their child's lunch sack increased an average of 0.11 servings for each unit of increase in the parent's knowledge of meal patterns ($p = 0.002$). None of the psychosocial variables was a significant predictor of amount of fruit parents packed in their children's lunch sacks.

Table 4.2. Means and standard deviations for psychosocial and behavioral variables targeted in *Lunch Is In The Bag* intervention shown by time (baseline versus follow-up) at comparison and intervention childcare centers.

		Intervention (n = 81)				Comparison (n = 51)			
		Baseline		Follow-up		Baseline		Follow-up	
Variables		Mean	SD[a]	Mean	SD	Mean	SD	Mean	SD
Knowledge of meal pattern		37.10	15.95	49.88	16.73	37.38	17.38	36.54	14.28
Outcome expectations	F[b]	87.73	8.33	91.09	7.60	89.27	11.56	90.60	8.22
	WG[c]***	80.60	11.64	86.69	10.92	83.78	12.23	82.99	12.17
	V[d]	76.37	10.32	81.32	10.60	81.20	9.87	81.59	11.98
Subjective Norms	F**	78.38	14.95	88.03	13.50	78.04	15.14	79.88	15.10
	WG*	71.81	16.96	79.92	17.47	71.17	16.01	74.88	15.63
	V*	69.51	15.15	78.44	14.20	68.09	13.40	74.29	15.24
Self-efficacy/	F	89.87	8.63	90.23	9.92	92.59	8.77	92.96	8.34
Perceived behavioral	WG	86.80	11.98	87.09	14.07	86.79	16.26	89.48	12.59
Control	V	84.82	10.18	85.45	11.51	84.57	15.01	87.50	9.74
Intentions	F	1.25	0.49	1.21	0.43	1.21	0.45	1.27	0.53
	WG	1.03	0.44	1.07	0.39	0.97	0.44	1.09	0.63
	V	0.92	0.33	1.04	0.29	1.07	1.40	1.09	0.48
Servings parents	F	1.89	1.29	1.86	1.17	1.23	0.77	1.13	0.86
packed in child's	WG**	0.62	0.99	1.15	1.34	0.47	1.00	0.50	0.92
sack lunches	V**	0.42	0.60	0.66	0.94	0.68	0.92	0.58	0.73

Significant time by intervention effects: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
SD[a] = standard deviation
F[b] = fruit
WG[c] = whole grain
V[d] = vegetable

Table 4.3. Coefficients and p-values from multilevel regression of the parent psychosocial variables on the parent behavioral variables of packing fruit, whole grain and vegetable in their preschool child's sack lunches.

Criterion Variable	Predictor	Coeff.[a]	p value
Serving of fruit	Knowledge of meal pattern	-0.03	0.375
	Fruit outcome expectation	0.02	0.112
	Fruit subjective norms	0.01	0.610
	Fruit self-efficacy/pbc[b]	0.00	0.982
	Fruit intention	0.02	0.056
Serving of whole grain	Knowledge of meal pattern**	0.11	0.002
	WG[c] outcome expectation	0.13	0.108
	WG subjective norms	0.03	0.062
	WG self-efficacy/pbc	0.22	0.122
	WG intention	0.01	0.375
Serving of vegetables	Knowledge of meal pattern	0.05	0.082
	V[d] outcome expectations**	0.02	0.007
	V subjective norms	0.01	0.381
	V self-efficacy/pbc***	0.05	0.000
	V intention*	0.01	0.048

Significant predictive effects = * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Coeff[a] = coefficient
pbc[b] = perceived behavioral control
WG[c] = whole grain
V[d] = vegetable

Discussion

This pilot study of *Lunch Is In The Bag* indicated significant changes in primary behavioral and proximal psychosocial objectives, and provides preliminary evidence of the usefulness of the psychosocial variables as predictors of the lunch packing behavior of parents. At the childcare centers where *Lunch Is In The Bag* was implemented, there were increases from baseline to follow-up in parents' knowledge of age appropriate meal patterns, in their positive expectations for whole grains and vegetables, and in subjective norms regarding the packing of fruit, whole grains, and vegetables in the child's lunch sack every day. Increased knowledge of meal patterns was associated with parents packing more whole grains in their children's lunch sacks; and increased expectations, self-efficacy/perceived behavioral control, and intentions for packing vegetables were associated with parents packing more vegetables in their children's lunch sacks.

These results are consistent with other research showing that parents' expectations, perceived behavioral control, and intentions are associated with providing their children with vegetables (85,86). To our knowledge, no studies have been published regarding parents' offering whole grains to their preschool-age children, although in a recent study parents identified knowledge as a barrier to purchasing whole grains (134). That finding lends support to the relationship the data show between knowledge and packing of whole grains.

As a pilot study, the small sample size prevents a more complete analysis of the pathways linking the intervention to the outcomes. The promising results of this pilot indicate an appropriate next step is an efficacy evaluation with sufficient sample size for detectable effect and mediation analysis. The predictive relationship seen for the packing behaviors for vegetables was significant, but not robust. The fact that parents frequently responded to the intention-to-pack items of the questionnaire with a range rather than a finite number may have prevented a stronger relationship between intentions and behaviors from coming through.

Modification of the items to a closed-ended format may strengthen the measurement of that construct.

Results of the pilot study also suggest the need to expand the theory base to a broader ecological framework that emphasizes environmental transaction and influences of both children and parents in changing and maintaining health behaviors (135,136,144,145). Children at centers where lunches must be sent from home cannot eat fruit, vegetables and whole grain if parents do not pack them in the sack lunch. But parents are not likely to pack fruit, vegetable and whole grain if they believe their children will not eat them. The current study did not include measures of children's food intake nor did it include measures of parent-child interactions in lunch packing decisions and behaviors.

In addition to the positive results of this pilot study, a primary strength was its exploration of an area of parental behavior, packing sack lunches, that has not received much attention, yet plays an important role in the development of young children's dietary behaviors. Further, the intervention format and study design were compatible with the child care setting, an environment that supports the health and well being of the child. The multi-component format that incorporated a variety of strategies to target the selected constructs used the childcare environment advantageously.

Implications.

The results of this study support the use of theory-based programs for behavioral nutrition education for parents with children enrolled in childcare center. Behavioral constructs within TPB and SCT provided a useful framework for program development, and should be expanded to include broader environmental aspects of SCT. Identification of specific constructs leads to selection of intervention strategies that can fit into the chosen environment. Behaviorally-based nutrition knowledge creates a solid foundation for good program; however, other strategies that develop peer and organizational support as well as provide opportunities to practice new

behaviors are critical. The multi-component program format can accommodate the variety of strategies and fits well in the childcare environment.

The use of classroom activities and parent-child activity stations in the intervention to stimulate greater parent-child interaction about nutrition and food choice presents an interesting area for further research. Food preparation, shopping, and lunch packing are all junctures where bi-directional interaction may be taking place affecting availability and accessibility of food to the child. These periods are not only valuable modeling/instruction time for the parent, but child asking behaviors, requests or attitudes about foods may influence what ends up on the dinner table, in the grocery cart or in the lunch sack (144). Exploration of these interpersonal interactions may generate valuable new strategies for encouraging healthy lunch packing behaviors.

Acknowledgments

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Chapter 5: Conclusions

The purpose of this study was to employ the Intervention Mapping process and successfully revise the *Lunch Box Program*, a single component program with a general message, into *Lunch Is In The Bag*, a multi-component program with an emphasis on fruits, vegetables and whole grains. By following the Intervention Mapping steps the program that resulted was 1) based on behavioral theory; 2) supported by current literature; 3) focused in both the target audience and performance objectives; 4) suited for a specific environment and 5) implemented with fidelity. The pilot study showed a significant increase in number of servings of vegetables and whole grains, and a change in behavioral constructs and feasibility for use in the childcare center environment.

The multi-component format of *Lunch Is In The Bag* engaged the teachers, children and parents to support and reinforce the nutrition education. Teachers recognized they had both resource materials and a vehicle to speak to parents about the contents of the lunches observed in the classroom. Through classroom activities, children were encouraged to ask for healthy foods. This worked as reciprocal reinforcement for parents to pack healthy foods and children to ask for healthy foods. The educational stations provided prompts for nutrition conversations and social support. Parents could share lunch packing and shopping ideas and recipes through the parent interactive tasks. The child interactive tasks prompted conversation between parent and child. Involvement of all the three to five year old classes in the same five week period ensured the childcare center was absorbed in the topic of nutrition which provided community support for healthy lunch packing behaviors.

The prevalence of childhood obesity calls attention to the need to address diet in all of the various environments where children spend their time. Childcare is recognized as an environment in which many children spend a substantial amount of time on a daily basis (26). Childcare centers are challenged to create policy that supports healthy lifestyle practices yet, if

they do not prepare meals and snacks, they exert little control over foods the children consume. Parents are also challenged to provide positive role models and promote healthful low-energy dense food choices. However, without knowledge, skills, practice and support they may not have the capabilities to regularly pack healthy lunches. A program that is designed to fit easily in a specific environment and provides information that the audience has identified as useful encourages high fidelity of implementation by the adopters and a high rate of acceptance by the participants. Programs such as *Lunch Is In The Bag* allow the childcare center and parents to work together for the well being of the child.

There is an important opportunity to provide behavior-based nutrition education program to parents in childcare centers that do not provide meals. The information that is sent home can be applied immediately. Influencing packing behaviors can have a mitigating effect on purchasing behaviors, home snacking behaviors and meal preparation habits. By sending the handouts home on Fridays, the working parents could incorporate suggestions into shopping or food preparation that weekend when they had more time and flexibility. In light of obesity statistics, any program that seeps into the home environment with positive effects on other family members is beneficial.

The study results present several ways for health professionals to intervene. Through the group interviews parents expressed a desire for information, ways to share with each other and the need for support from both the childcare center and the food industry. The pilot study of *Lunch Is In The Bag* demonstrated that the childcare center communities are portals to ready audiences of parents of young children. Further, childcare centers in the study appreciated the opportunity to provide program about a topic they felt was important to the health and well being of the children. The materials were kept simple and engaging but were designed to compliment each other to achieve the desired change in behaviors.

Currently, there are no state regulations about nutrition policy for childcare centers that require parents to send their child's lunch. This represents an area for attention. Childcare centers may feel that they are not in a position to create excess policies about foods sent from home. However, basic policies that restrict sweets and high fat items could easily be implemented when accompanied by specific lists of items that are unacceptable and lists of suggested items. Another policy consideration must eventually be that if a center closes their food service facilities they would be required to offer nutrition education programs for the parents on a continuing basis. Childcare centers must retain some responsibility for the nutritional health of the children in their care during this important time of growth and development as a way of fighting obesity in the U.S. The early years in life are a critical time to impact the obesity epidemic.

Child Care Center Baseline Information

Name of Center _____
Address: _____
City/State _____Zip code_____
Director: _____
Phone: _____
Email: _____
Hours of operation: _____
Days of operation: _____

Description of children served

Age range of children: _____
Total number of children served per day: _____
Breakdown of children by age: 6 weeks – 18 months _____
18 months - 2 years _____
3 – 5 years _____
Over 5 years _____
Number of classrooms for: 6 weeks – 18 months _____
18 months – 2 years _____
3 – 5 years _____
Ethnic background
Non-Hispanic Black _____
Non-Hispanic White _____
Hispanic _____
Asian _____
Native American _____

Family Income range served

Proportion low income: _____
Proportion high income: _____

Class size

Average number of children per class: 6 weeks- 18 months _____
18 months – 2 years _____
3 – 5 years _____
Over 5 years _____

Personnel

Number of child care personnel _____
Ratio staff to children in classroom: 6 weeks – 18 months _____
18 months – 2 years _____
3 – 5 years _____
Over 5 years _____

Nutrition Education/Training

Nutrition/health education or training for teachers: _____
_____
_____

Nutrition/health education program for children: _____
_____
_____

Nutrition/health education program for parents: _____
_____
_____

Lunch Policy

Current documented lunch policy for parents: _____
_____
_____
_____

Received copy of policy _____

Current lunch storage methods for children's lunches: _____
_____
_____
_____

In classroom _____ Outside of classroom _____
Refrigeration provided _____ No refrigeration provided _____

Are/How items heated for children? _____
_____

Current classroom policy/guidelines at lunch time:
Time Lunch is eaten: _____
Who lays out lunch: _____
Personnel present while children eat lunch: _____
Does staff eat their lunch with children: _____
Directions given to children about eating lunch: _____
_____
Length of time allowed for lunch: _____

Is milk provided: _____
Type: _____
Size cup: _____
Method of determination of who receives beverages: _____
_____
Other beverages provided _____

Date:
Daycare:
Address:

Re: *Lunch is in the Bag*: A comprehensive nutrition education program designed to improve sack lunches provided by parents of preschool age children who attend full time child care.

Dear Director_____

In the following pages you will find background information and plans for the nutrition education program *Lunch is in the Bag*. This program will be offered in select full time child care programs in Travis and Williamson Counties from August 2008 through April 2009.

We are seeking approval from your daycare to implement this program. Participation requires a minimal amount of time from you and your staff and includes materials and staff support for the program. Participation and your daycare's responsibilities are explained in detail in the pages that follow, as well as through director and teacher meetings with our research team.

The program *Lunch is in the Bag* will benefit your facility by providing teacher training in basic nutrition education activities, supplying "best practice" suggestions for your current lunch program, and parent nutrition education materials. If you are interested in participating in the program, *Lunch is in the Bag*, please complete the attached letter of participation and fax it to Deanna Staskel at 512-476-9762.

Lunch is in the Bag is funded by a grant from the National Cancer Institute a branch of the National Institute of Health. If you have any questions or concerns please contact me at 512-471-7632 or Sara Sweitzer, RD, LD, M Ed. at 512-475-9762 or by email sjsweitz@mail.utexas.edu.

Sincerely,

Margaret E. Briley, PhD.
Principal Investigator
Professor, Nutritional Sciences
Department of Human Ecology, A2700
The University of Texas at Austin
1 University Station
Austin, TX 78712
m.briley@mail.utexas.edu

Brief Overview of *Lunch is in the Bag*

During a child's time in full time child care he/she should receive one half to two thirds of their daily nutritional needs (1). Parents of children who attend full time child care acknowledge that the child care environment is important for developing children's eating habits (2,3). *Lunch is in the Bag* is designed to educate and encourage parent to regularly pack fruit vegetables and whole grains in their preschool age child's sack lunch. The complimenting lunch time policies, classroom activities support the weekly educational material provided to the parents.

Project Goals: *Lunch is in the Bag*

The goal of *Lunch is in the Bag* is to provide useful basic nutrition education to parents to enable them to make positive healthy improvements that include regularly packing fruit, vegetables and whole grains in the sack lunches they pack for their children.

Project Description: *Lunch is in the Bag*

Lunch is in the Bag will be presented at each selected child care facility for a period of 5 weeks. The parent components will be structured within a different topic each week.
The parent components include:

- Weekly handouts, mailed to the parents
- Educational Stations set up at the child care facility at pick up time.

The weekly topics will cover:

1) MyPyramid/Dietary Guidelines
2) Reading Nutrition Labels
3) Packing a Safe Lunch
4) Packing an Appealing and Economical Lunch
5) Life long Nutrition Habits.

Three weekly classroom activities, 2 required and 1 optional are designed to support the improvements that *Lunch is in the Bag* is encouraging parents to make. The daycare policies and procedures are designed to provide an optimal eating environment for the children.

Day Care Facility Responsibilities

To participate in the program directors at daycare center will sign a letter of intent and agree to:

- Introduce *Lunch is in the Bag* to parents.
- Provide classroom activity training time for teacher's.
- Support teachers in implementation of classroom activities.
- Assist with parent recruitment.
- Evaluate current lunch time practices and implement proposed policies where possible.
- Provide space during pick up time for station set up.

- Allow researchers to observe children's lunches before the program intervention period and after intervention.
- Participate in program evaluation measures.

Benefits for Center participation

All participating child centers will receive:

- *Lunch is in the Bag* program materials, handouts, classroom activity guides, and suggested policy and procedures for lunch environments.
- Teacher training from a Registered Dietitian on the researcher team
- A comprehensive nutrition education program to offer to your parents.

Program Assessment

We will assess program implementation, dissemination and impact of *Lunch is in the Bag* on children's lunches based on the following measures:

1) Direct observation of children's lunches for content, serving sizes and food temperatures before and after intervention.
2) Documentation of performance of classroom activities.
3) Direct observation of educational stations for duration, numbers attending and level of interaction.
4) Documentation of evaluation of current policies compared to recommended policies.
5) Documentation of changes in parent behavioral constructs through a parent survey instrument.
6) Qualitative feedback from parents, teachers and directors on attitudes and attributes of various components of *Lunch is in the Bag*.

Project Timeline

August 1, 2008 – September 15, 2008

1) Determine randomized groups of centers
2) For the centers designated to receive the intervention teachers will receive training for classroom activities
3) Meet with daycare director to evaluate lunch policies and procedures
4) Complete parent recruitment that includes acquiring signed consent forms and completed Parent Surveys.

September 15, 2008 – November 15, 2008

1) Complete random three day observation of lunches.
2) Implement 5 week program *Lunch is in the Bag* through handout mailings, stations at the daycare facility and classroom activities.
3) Complete random three day observation of lunches.
4) Complete second Parent Surveys.

February 1, 2009 – April 30, 2009

1) Train teachers in the remaining centers for classroom activities
2) Implement 5 week program *Lunch is in the Bag* at remaining centers through handouts, stations at the daycare facility and classroom activities.
3) Complete random three day observation of lunches in centers that receive the intervention in the fall.

References

1. Briley ME, Roberts-Gray C. Position of the American Dietetic Association: Benchmarks for nutrition programs in child-care settings. *J Am Diet Assoc*. 2005;105:979-986.
2. Perry CL, Story M, Lytle LA. Promoting healthy dietary behaviors. In Weissberg R, ed. *Healthy Children 2010: Enhancing Children's Wellness, Issues in Children's and Family Lives*. Thousand Oaks, CA:Sage;1997:124-249.
3. Skinner JD, Carruth BR, Bounds W, Zeigler P, Reidy K. Do food-related experiences in the first 2 years of life predict dietary variety in school-age children? *J Nutr Educ Behav*. 2002;34:310-315.

Letter of Participation Agreement

_____ would like to participate in
(name of child care center)

"Lunch is in the Bag" and will work with you to assure that the project receives our full consideration.

_____ _____
Signature of Center Director Date

_____
Printed Name

Please complete this form and fax or email to Deanna Staskel, PhD, RD, LD.

Fax Number: 512-475-9762
Email Address: Deanna @mail.utexas.edu
Phone Number: 512-475-9762

_____

Dear Parents,

I am writing to let you know of an opportunity that our center will have this school year. We will be participating in a nutrition education study that is being conducted by Dr. Margaret Briley from the University of Texas at Austin. Dr. Briley and her and her team have designed *Lunch is in the Bag*, a nutrition education program for parents of children ages 3-5 years old. We appreciate that preparing a healthy lunch every day can sometimes be a challenge and felt that this program would provide some support for your effort. We have been chosen to test out this 5 week program for them. Our teachers have already received training in nutrition and the classroom activities for the children. The purpose of this letter is to introduce you to the different aspects of the program and invite you to participate. The different components are:

Weekly handouts: Each handout will provide you with helpful nutrition information for your child as well as menu ideas

Educational Stations: Each week of the program on Tuesday through Thursday there will be a station set up during pick up time. These stations will offer activities and information for you and your child.

Classroom activities: Each week your child will participate in nutrition education activities that are designed to increase their knowledge and awareness of the importance of nutrition and health.

Lunch Time Practices: As part of the program we will be looking closely at our lunch time practices to see if there are helpful changes that we can make.

During the week of August 18- 22 members of Dr. Briley's research team will be at a table by the front door during both drop-off and pick-up times to give you an opportunity to ask questions and sign up. If you choose to participate in the study you will be asked to sign a consent form and fill out a survey at the beginning and the end, and allow you child's lunch to be observed to record what was packed in the lunch. The food will not be touched. For your participation, you will receive a $10.00 gift card at the beginning and the end of the study.

Good nutrition is important for all of us as well as growing children. We are excited about this program and hope you find it beneficial. We continue to work with you to help your child grow and develop.

Sincerely,

Child Care Director.

Code Number _____

Parent Contact Information

Name _____
Address _____
_____
_____

Preferred method of contact:

Home Phone _____

Cell Phone _____

Email _____

THE LUNCH IS IN THE BAG PROGRAM
"Increasing Fruits, Vegetables, and Whole Grains in Preschool Sack Lunches"
PRESCHOOL PARENT CONSENT FORM
UT 2007-09-0012
HSC-SPH-08-0078

PI: Margaret Briley, PhD, RD, LD (UT-Austin)
Deanna Hoelscher, PhD, RD, LD, CNS (Dell Center, UT School of Public Health, Austin Regional Campus)

INVITATION TO TAKE PART:

You are being invited to take part in a research study called *The Lunch is in the Bag Program* or "Increasing Fruits, Vegetables, and Whole Grains in Preschool Sack Lunches". This study is being conducted by Drs. Margaret Briley and Deanna Hoelscher and research staff at the University of Texas-Austin and the Dell Center at the University of Texas School of Public Health (UTSPH), University of Texas Health Science Center (UTHSC) at Houston. This form provides you with the information about the study. The person in charge of this research study will also describe the study to you and answer all of your questions. Please read the information below and ask any questions you might have before deciding whether or not to take part. Your taking part is entirely voluntary. You can refuse to take part. A decision not to take part will not change the services that your receive from the childcare center or with the research staff from the UT Austin or UT Houston. You may refuse to answer any questions asked or written on any forms.

This research project (UT 2007-09-0012 & HSC-SPH-08-0078) has been reviewed by the Committee for the Protection of Human Subjects at the University of Texas Austin and at the University of Texas Health Science Center at Houston.

DESCRIPTION OF RESEARCH

PURPOSE: The purpose of this study is to revise, implement and evaluate a program, *The Lunch is in the Bag Program*, in order to increase the servings of fruits, vegetables and whole grains parents pack in preschool child lunches. A total of 80 families at six childcare centers will take part in the pilot section of the adapted Lunch Box Program that will be used for the intervention that will last six weeks. We expect as many as 60 childcare personnel will take part in focus groups to guide the adaptation of the Lunch Box Program.

PROCEDURES:

a. You will be asked to fill out a questionnaire at the beginning and end of the study.
b. You will be asked to give the researchers permission to look at your child's sack lunch and to test the temperature of the container with a Raytek ST20 Pro Series non-contact temperature gun.
c. You will be given handouts that focus on fruits, vegetables and whole grains that can be included in your child's sack lunch.

d. Four site-level sessions will be held that emphasize and reinforce the messages of inclusion of more fruits, vegetables and whole grains in children's sack lunches.
e. You will be asked to take part in "activity stations" at your child care center when you pick up your child. The activities you will take part in will be brief, hands-on activities that show ways to include fruits, vegetables and whole grains in your child's sack lunches.
f. You will be questioned at the end of the study period to find out which elements of the Lunch Box Intervention Program were the most appealing and feasible.
g. You and Childcare personnel will take part in focus groups to tell the researchers the results of the LBP intervention. The focus groups will be audio taped The tapes will be kept in a secure place (e.g. a locked filing cabinet in Dr. Briley's lab). The tapes will be heard only for research purposes by the investigator and her associates. The tapes will be erased after they are transcribed.
h. The data resulting from your taking part may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with the study or with your taking part.

TIME COMMITMENT: Total amount of time to take part in the study is about three hours.

BENEFITS: You may or may not receive any benefit to taking part in this study; however your taking part may help to increase your awareness about including servings of fruits, vegetables and whole grains when you pack your child's lunch. You may enjoy the group discussions about the study and find important and interesting information.

RISKS AND/OR DISCOMFORTS: There are no known risks to taking part in this study.

ALTERNATIVES: The only alternative is not to agree to take part in this study.

STUDY WITHDRAWAL: You can withdraw from the study at any time.

COST, REIMBURSEMENT, AND COMPENSATION: If you decide to take part in the pilot study you will receive a $10 gift certificate for each of 2 questionnaires completed for a possible total of $20.

CONFIDENTIALITY AND PRIVACY PROTECTIONS: Please understand that representatives of the, the Committee for the Protection of Human Subjects, and the National Institutes of Health, the sponsor of this research, may review your research for the purposes of verifying research data, and will see personal identifiers. However, identifying information will not appear on records retained by the sponsor. You will not be personally identified in any reports or publications that may result from this study. A special number will be used to identify you in the study and only the investigator will know your name.

CONTACTS AND QUESTIONS: Dr. Margaret Briley or her staff will be glad to answer any further questions at any time at 512-471-7632 or 512-475-9762. Dr. Deanna Hoelscher will also

be available to answer your questions at 512-482-6168.

SIGNATURES: Sign below only if you understand the information given to you about the research and choose to take part. Make sure that any questions have been answered and that you understand the study.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information and have sufficient information to make a decision about participating in this study. I consent to participate in the study.

_____

Printed Name of Subject

_____ Date/Time _____

Signature of Subject

_____

Printed Name of Person Obtaining Consent

_____ Date/Time _____

Signature of Person Obtaining Consent

_____ Date/Time _____

Signature of Investigator

CPHS STATEMENT:

This study (UT 2007-09-0012 & HSC-SPH-08-0078) has been reviewed by the Committee for the Protection of Human Subjects at the University of Texas at Austin and the University of Texas Health Science Center at Houston.

If you have any questions or concerns about your rights as a research subject, call Jody Jensen, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects at (512) 232-2685 or the Office of Research Compliance and Support at (512) 471-8871 or email: orsc@uts.cc.utexas.edu or you can also call the Committee for the Protection of Human Subjects at the University of Texas Health Science Center at Houston at (713)500-7943.

Parent Survey

Instructions: The parent or guardian completing this survey should be the one that is primarily responsible for preparing the daily sack lunch their child takes to the child care center on a typical weekday.

I pack Vegetables (e.g. carrot, broccoli, celery, cucumber) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. they are good for health.	1	2	3	4	5
2. they taste good.	1	2	3	4	5
3. they are inexpensive.	1	2	3	4	5
4. they are easy to prepare.	1	2	3	4	5
5. I grew up eating them.	1	2	3	4	5
6. of their vitamins and minerals.	1	2	3	4	5
7. I like to eat them.	1	2	3	4	5
8. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
9. If I wanted to I could easily pack 1 serving of vegetables in my preschool child's sack lunch every day.	1	2	3	4	5
10. Most people who are important to me think I should pack 1 serving of vegetables in my preschool child's sack lunch every day.	1	2	3	4	5
11. Most people who are important to me support my packing 1 serving of vegetables in my preschool child's sack lunch every day.	1	2	3	4	5
12. Other parents at my child care center think I should pack 1 serving of vegetables in my my preschool child's sack lunch every day.	1	2	3	4	5
13. My child's teacher(s) at the child care center think that I should pack 1 serving of vegetables in my preschool child's sack lunch every day.	1	2	3	4	5
14. My preschool child thinks I should pack 1 serving of vegetables in their sack lunch every day.	1	2	3	4	5

15. I intend to pack _____ servings of vegetables in my preschool child's sack lunch every day.

I pack Fruits (e.g. apples, bananas, oranges, strawberries) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
16. they are good for health.	1	2	3	4	5
17. they taste good.	1	2	3	4	5
18. they are inexpensive.	1	2	3	4	5
19. they are easy to prepare.	1	2	3	4	5
20. I grew up eating them.	1	2	3	4	5
21. of their vitamins and minerals.	1	2	3	4	5

22. I like to eat them.	1	2	3	4	5
23. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
24. If I wanted to I could easily pack 1 serving of fruit in my preschool child's sack lunch every day.	1	2	3	4	5
25. Most people who are important to me think I should pack 1 serving of fruit in my preschool child's sack lunch every day.	1	2	3	4	5
26. Most people who are important to me support my packing 1 serving of fruit in my preschool child's sack lunch every day.	1	2	3	4	5
27. Other parents at my child care center think I should pack 1 serving of fruit in my my preschool child's sack lunch every day.	1	2	3	4	5
28. My child's teacher(s) at the child care center think that I should pack 1 serving of fruit in my preschool child's sack lunch every day.	1	2	3	4	5
29. My preschool child thinks I should pack 1 serving of fruit in their sack lunch every day.	1	2	3	4	5

30. I intend to pack _____ servings of fruit in my preschool child's sack lunch every day.

I pack Whole Grains (e.g. whole wheat, rye, oatmeal) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
31. they are good for health.	1	2	3	4	5
32. they taste good.	1	2	3	4	5
33. they are inexpensive.	1	2	3	4	5
34. they are easy to prepare.	1	2	3	4	5
35. I grew up eating them.	1	2	3	4	5
36. of their vitamins and minerals.	1	2	3	4	5
37. I like to eat them.	1	2	3	4	5
38. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
39. If I wanted to I could easily pack 1 serving of whole grains in my preschool child's sack lunch every day.	1	2	3	4	5
40. Most people who are important to me think I should pack 1 serving of whole grains in my preschool child's sack lunch every day.	1	2	3	4	5
41. Most people who are important to me support my packing 1 serving of whole grain in my preschool child's sack lunch every day.	1	2	3	4	5
42. Other parents at my child care center think I should pack 1 serving of whole grains in my preschool child's sack lunch every day.	1	2	3	4	5
43. My child's teacher at my child care center thinks that I should pack 1 serving of whole grains in	1	2	3	4	5

my preschool child's sack lunch every day.					
44. My preschool child thinks that I should pack 1 serving of whole grains in their sack lunch every day.	1	2	3	4	5

45. I intend to pack _____ servings of whole grains in my preschool child's sack lunch every day,

I pack Meat and Beans (e.g. peanut butter, tuna fish, chicken, pinto beans, eggs) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
46. they are good for health.	1	2	3	4	5
47. they taste good.	1	2	3	4	5
48. they are inexpensive.	1	2	3	4	5
49. they are easy to prepare.	1	2	3	4	5
50. I grew up eating them.	1	2	3	4	5
51. of their vitamins and minerals.	1	2	3	4	5
52. I like to eat them.	1	2	3	4	5
53. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
54. If I wanted to I could easily pack 1 serving of proteins in my preschool child's sack lunch every day.	1	2	3	4	5
55. Most people who are important to me think I should pack 1 serving of proteins in my preschool child's sack lunch every day.	1	2	3	4	5
56. Most people who are important to me support my packing 1 serving of proteins in my preschool child's sack lunch every day.	1	2	3	4	5
57. Other parents at my child care center think I should pack 1 serving of proteins in my preschool child's sack lunch every day.	1	2	3	4	5
58. My child's teacher(s) at my child care center thinks that I should pack 1 serving of proteins in my preschool child's sack lunch every day.	1	2	3	4	5
59. My preschool child thinks that I should pack 1 serving of proteins in their sack lunch every day.	1	2	3	4	5

60. I intend to pack _____ servings of proteins in my preschool child's sack lunch every day,

I pack Sweets (e.g. cookies, cake, ice cream, candy) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
61. they are good for health.	1	2	3	4	5
62. they taste good.	1	2	3	4	5

63. they are inexpensive.	1	2	3	4	5
64. they are easy to prepare.	1	2	3	4	5
65. I grew up eating them.	1	2	3	4	5
66. of their vitamins and minerals.	1	2	3	4	5
67. I like to eat them.	1	2	3	4	5
68. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
69. If I wanted to I could easily pack 1 serving of sweets in my preschool child's sack lunch every day.	1	2	3	4	5
70. Most people who are important to me think I should pack 1 serving of sweets in my preschool child's sack lunch every day.	1	2	3	4	5
71. Most people who are important to me support my packing 1 serving of sweets in my preschool child's sack lunch every day.	1	2	3	4	5
72. Other parents at my child care center think I should pack 1 serving of sweets in my preschool child's sack lunch every day.	1	2	3	4	5
73. My child's teacher(s) at my child care center think that I should pack 1 serving of sweets in my preschool child's sack lunch every day.	1	2	3	4	5
74. My preschool child thinks that I should pack 1 serving of sweets in their sack lunch every day.	1	2	3	4	5

75. I intend to pack _____ servings of sweets in my preschool child's sack lunch every day.

I pack Chips (e.g. potato chips, corn chips, cheese puffs) in my preschool child's lunch because:	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
76. they are good for health.	1	2	3	4	5
77. they taste good.	1	2	3	4	5
78. they are inexpensive.	1	2	3	4	5
79. they are easy to prepare.	1	2	3	4	5
80. I grew up eating them.	1	2	3	4	5
81. of their vitamins and minerals.	1	2	3	4	5
82. I like to eat them.	1	2	3	4	5
83. my preschool child like to eat them.	1	2	3	4	5

	Strongly Disagree				Strongly Agree
84. If I wanted to I could easily pack 1 serving of chips in my preschool child's sack lunch every day.	1	2	3	4	5
85. Most people who are important to me think I should pack 1 serving of chips in my preschool child's sack lunch every day.	1	2	3	4	5
86. Most people who are important to me support my packing 1 serving of chips in my preschool child's sack lunch every day.	1	2	3	4	5
87. Other parents at my child care center think I should pack 1 serving of chips in my	1	2	3	4	5

preschool child's sack lunch every day.					
88. My child's teacher(s) at my child care center thinks that I should pack 1 serving of chips in my preschool child's sack lunch every day.	1	2	3	4	5
89. My preschool child thinks that I should pack 1 serving of chips in their sack lunch every day.	1	2	3	4	5

90. I intend to pack _____ servings of chips in my preschool child's sack lunch every day.

	Very Little Control				Complete Control
91. How much control do you have over packing 1 serving of vegetables in your preschool child's sack lunch?	1	2	3	4	5
92. How much control do you have over packing 1 serving of fruit in your preschool child's sack lunch?	1	2	3	4	5
93. How much control do you have over packing 1 serving of whole grains in your preschool child's sack lunch?	1	2	3	4	5
94. How much control do you have over packing 1 serving of proteins in your preschool child's sack lunch?	1	2	3	4	5
95. How much control do you have over packing 1 serving of sweets in your preschool child's sack lunch?	1	2	3	4	5
96. How much control do you have over packing 1 serving of chips in your preschool child's sack lunch?	1	2	3	4	5

	Extremely Difficult				Extremely Easy
97. For me to pack 1 serving of vegetables in my preschool child's sack lunch is:	1	2	3	4	5
98. For me to pack 1 serving of fruit in my preschool child's sack lunch is:	1	2	3	4	5
99. For me to pack 1 serving of whole grains in my preschool child's sack lunch is:	1	2	3	4	5
100. For me to pack 1 serving of proteins in my preschool child's sack lunch is:	1	2	3	4	5
101. For me to pack 1 serving of sweets in my preschool child's sack lunch is:	1	2	3	4	5
102. For me to pack 1 serving of chips in my preschool child's sack lunch is:	1	2	3	4	5

How sure are you that you can:	Very Sure I cannot	I think I cannot	Not Sure	I think I can	Very Sure I can
103. regularly tell your preschool child you like fruit for lunch every day?	1	2	3	4	5
104. regularly tell your preschool child you like vegetables for lunch every day?	1	2	3	4	5
105. regularly tell your preschool child you like whole grains for lunch?	1	2	3	4	5
106. regularly encourage your preschool child to eat fruit at dinner?	1	2	3	4	5
107. regularly encourage your preschool child to eat whole grains at dinner?	1	2	3	4	5
108. regularly encourage your preschool child to eat vegetables at dinner?	1	2	3	4	5
109. regularly insist that your preschool child try a bite of a new fruit at dinner?	1	2	3	4	5
110. regularly insist that your preschool child try a bite of a new vegetable at dinner?	1	2	3	4	5
111. regularly insist that your preschool child try a bite of a new whole grain food at dinner?	1	2	3	4	5

112. Are you familiar with MyPyramid?

_____ yes _____no

113. According to MyPyramid, what is the amount of vegetables that preschool children should eat each day?

a. 1 cup
b. 1 ½ cups
c. 2 cups
d. 2 ½ cups

114. According to MyPyramid, what is the amount of fruit that preschool children should eat each day?

a. ½ cup
b. 1 cup
c. 1 ½ cups
d. 2 cups

115. How much is a serving of dry cereal for a 4 to 5 year old child?

a. ½ cup
b. 1 cup
c. 1 ½ cups
d. 2 cups

116. How much is a serving milk for a 2 to 3 year old child?

a. ½ cup
b. ¾ cup
c. 1 cup

117. Which of the following foods would contain fat?

a. apples
b. green beans
c. peanut butter
d. nonfat yogurt
e. whole wheat bread

118. According to MyPyramid, what percent of your preschool child's grain intake should be whole grains?

a. 25% of all grain servings
b. 33% of all grain servings
c. 50% of all grain servings
d. 75% of all grain servings

	Extremely Harmful				Extremely Beneficial
119. Packing 1 serving of vegetables in my preschool child's sack lunch everyday is:	1	2	3	4	5
120. Packing 1 serving of fruit in my preschool child's sack lunch everyday is:	1	2	3	4	5
121. Packing 1 serving of whole grains in my preschool child's sack lunch everyday is:	1	2	3	4	5

	Extremely Foolish				Extremely Wise
122. Packing 1 serving of vegetables in my preschool child's sack lunch everyday is:	1	2	3	4	5
123. Packing 1 serving of fruit in my preschool child's sack lunch everyday is:	1	2	3	4	5
124. Packing 1 serving of whole grains in my preschool child's sack lunch everyday is:	1	2	3	4	5

	Extremely Unpleasant				Extremely Pleasant
125. Packing 1 serving of vegetables in my preschool child's sack lunch everyday is:	1	2	3	4	5
126. Packing 1 serving of fruit in my preschool child's sack lunch everyday is:	1	2	3	4	5
127. Packing 1 serving of whole grains in my preschool child's sack lunch everyday is:	1	2	3	4	5

	Extremely Stressful				Extremely Agreeable
128. Packing 1 serving of vegetables in my preschool child's sack lunch everyday is:	1	2	3	4	5
129. Packing 1 serving of fruit in my preschool child's sack lunch everyday is:	1	2	3	4	5
130. Packing 1 serving of whole grains in my Preschool child's sack lunch everyday is:	1	2	3	4	5

Demographics

131. Number of people in your household _____

132. Total number of children in your household _____

133. Your relationship to the child: Please circle only one response.

a. Mother
b. Father
c. Stepmother
d. Stepfather
e. Other (please indicate) _____

134. Your sex: Please circle only one response.

a. Female
b. Male

135. Your age _____

136. Your height _____ft. _____ in.

137. Your weight _____lbs.

138. Your current marital status: Please circle only one response.

a. Single, never married
b. Married
c. Separated
d. Divorced
e. Widowed
f. Living with partner

139. Your highest level of education: Please circle only one response.

a. Completed some high school, but no degree
b. Completed high school or equivalent
c. Post high school, business or trade school
d. Completed some university/college, but no degree
e. Completed university/college

f. Some graduate/professional school but no degree
g. Completed graduate/professional school

140. Estimate your annual family income: Please circle only one response

a. Less that $20,000
b. $20,000 - $40,000
c. $40,000 - $60,000
d. $60,000 - $80,000
e. $80,000 - $100,000
f. $100,000 – and above

141. Your racial/ethnic background: Please circle only one response or write in the correct answer.

a. American Indian or Alaskan Native
b. Asian or Asian American
c. Black. African American, non-Hispanic
d. Hispanic or Latino American
e. Middle Eastern or Middle Eastern American
f. Pacific Islander
g. White European American or non-Hispanic
h. Other (please specify) _____

142. Current employment status: Please circle only one response or write in the correct answer.

a. Unemployed
b. Part-time
c. Full-time
d. Retired
e. Homemaker
f. Other (please specify) _____

Teacher Training Documentation

Child Care Center _____
Date _____

Name	Nutrition Education	Classroom Activities

Instructor: _____ Date _____

Certificate of Completion

Nutrition Education

This is to certify that

_____

has completed 1 hour of nutrition education training at

_____

on

_____

Instructor: _____

Classroom Activity Log
Week 1 (revised 7-13-08)

Child Care Center: _____
Date:_____
Classroom teacher: _____

Week 1, MyPyramid

Please indicate on the chart below that the activity was completed and how you would rate the effectiveness of the activity.

Activity	Completed	Rating			
		Excellent	Good	Fair	Poor
MyPyramid MyPlacemat	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
"Oliver's Fruit Salad"	☐	☐	☐	☐	☐
Favorite Fruit Friday	☐	☐	☐	☐	☐

Classroom Activity Log
Week 2

Child Care Center: _____
Date:_____
Classroom teacher: _____

Week 2, Grains

Please indicate on the chart below that the activity was completed and how you would rate the effectiveness of the activity.

Activity	Completed	Rating			
		Excellent	Good	Fair	Poor
The Grain Train	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
"Goldilocks and the 3 Bears"	☐	☐	☐	☐	☐
Great Grain Thursday	☐	☐	☐	☐	☐

Classroom Activity Log
Week 3

Child Care Center: _____
Date:_____
Classroom teacher: _____

Week 3, Germs

Please indicate on the chart below that the activity was completed and how you would rate the effectiveness of the activity.

Activity	Completed	Rating			
		Excellent	Good	Fair	Poor
"Sink Those Germs"	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
"Eating the Alphabet"	☐	☐	☐	☐	☐

Classroom Activity Log
Week 4

Child Care Center: _____
Date:_____
Classroom teacher: _____

Week 4, Vegetables

Please indicate on the chart below that the activity was completed and how you would rate the effectiveness of the activity.

Activity	Completed	Rating			
		Excellent	Good	Fair	Poor
Favorite Family Meal	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
"Growing Vegetable Soup"	☐	☐	☐	☐	☐
Vitamin Vegetable Wednesday	☐	☐	☐	☐	☐

Classroom Activity Log
Week 5

Child Care Center: _____
Date:_____
Classroom teacher: _____

Week 5, Fruit and Vegetable

Please indicate on the chart below that the activity was completed and how you would rate the effectiveness of the activity.

Activity	Completed	Rating			
		Excellent	Good	Fair	Poor
Sensory Fruits and Vegetables	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
"This is the Way We Eat Our Lunch"	☐	☐	☐	☐	☐

Mailed Handouts Documentation

Name	Week 1	Week 2	Week 3	Week 4	Week 5
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____	_____
10._____	_____	_____	_____	_____	_____
11._____	_____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____	_____

Food Observation Record
Page ____ of _____

Center _____
Child's ID #: _____ **Date**: _____
Lunch Container: _____ **Ice pack**: Y_____ N_____
number_____

Food Group	Food item (w/brand name	Amount packed	Amount eaten	# of servings	Method packed	Cooked or Raw	Color	Shape	Texture	Temperature

Food Group: M = Meat & beans
D = Dairy
O = oils/fats
F = Fruit
V = Vegetables
G = Grains
C = Condiments
Ch = chips
S = sweets

Method packed: PB = plastic bag
PB = plastic bag
W = wax paper
P = paper
RC = reusable container
AF = aluminum foil
Cb = cardboard
IP= individual packaging
T= Thermos

Amount: c = cup
oz = ounce
floz = fluid ounce
piece = individual piece

Texture: Ch = chewy
WC = wet & crisp
DC = dry & crunchy
SM = smooth
SF = soft
L = liquid
T = tender
M = mixed
O = other

Cooked or Raw: C = cooked
R = raw

Color: B = brown
G = green
R = red
O = orange
BL = blue
Y = yellow
W = white
P = purple
M = mixed

Shape: C = circles
Sq = Square
S = Star
R = Rectangle
T = triangle
R = Ring
Cy = cylinder
A = animal or novelty
Cb = cubed
M = mixed

Station Event Sampling

Date: _____ Station ID:_____ Center ID:_____
Start time: _____ End time: _____

Who visited station	W=woman, M=Man, B=boy, G=girl*	Event 1	Event 2	Event 3
Age of child(ren)	R=3-5 years, Y=younger, O=older			
Amount of engagement with poster	5=diligent, 3=looked & listened but did not engage 1=disinterested			
Poster images	5=appreciative, 3=neutral, 1=denigrating			
Poster information	5=appreciative, 3=neutral, 1=denigrating			
Amount of engagement with parent activity	5=diligent, 3=looked & listened but did not engage 1=disinterested			
Performance of the activity	4=completed, 3=attempted 2=not attempted, 1=refused			
Content of the activity	5=appreciative, 3=neutral, 1=denigrating			
Format of the activity	5=appreciative, 3=neutral, 1=denigrating			
Amount of extrapolation from the activity	5=many questions 3=neutral 1=dismissive			
Amount of engagement with child activity	5=diligent, 3=looked & listened but did not engage 1=disinterested			
Performance of the activity	4=completed, 3=attempted 2=not attempted, 1=refused			
Content of the activity	5=appreciative, 3=neutral, 1=denigrating			
Format of the activity	5=appreciative, 3=neutral, 1=denigrating			
Amount of extrapolation from the activity	5=many questions, 3=neutral, 1=dismissive			
Took away copy of the handout	4=yes with appreciation, 3=yes, 2=no, 1=no with dismissiveness			
Took away copy of ……	4=yes with appreciation, 3=yes, 2=no, 1=no with dismissiveness			
Took away copy of ……	4=yes with appreciation, 3=yes, 2=no, 1=no with dismissiveness			
Interaction with station attendant	5=respected as an authority, 4=accepted, 3=neutral, 2=tolerated, 1=rejected			
Overall reaction to station	5=appreciative, 3=neutral, 1=denigrating			
Overall reaction to placement of station	5=appreciative, 3=neutral, 1=denigrating			

Comments:
Event
1_____
__
_____
_____

Event
2_____
__
_____
_____

Station Event Sampling Protocol\

Tool Description: An evaluative tool for station attendants to chart station visitors' reactions to the station.

Implementation: Each station attendant will fill out an event column after every third station visitor they interact with.

Guidelines: Each station attendant will fill out separate forms based on their individual interactions with visitors

After every third visitor/visitor set (just parent or parent and child(ren)) the station attendant will fill out an event
column.

After completing 3 events the station attendant will fill in the consecutive number on the second sheet.

The sheets for both attendants will be copied and stapled together.

The hard copies will be kept in the file in Room 331 Gearing.

The data from the sheets will be entered into an exel spreadsheet and stored digitally on a flash drive.

Materials: adequate station event sampling forms to cover each center.
Pens

Parent Summary Evaluation

Your responses to the following questions will help us evaluate *Lunch is in the Bag*. Thank you for your time.

1.Please check the boxes to show how you received each of the following *Lunch is in the Bag* handouts.	Did not Receive	Received through the mail	Received as information from the Center/school
Handout A, life long eating habits:	☐	☐	☐
Handout B, learning from labels:	☐	☐	☐
Handout C, keeping food safe:	☐	☐	☐
Handout D, making lunches appealing:	☐	☐	☐
Handout E, looking beyond the bag:	☐	☐	☐

2. How much of the *Lunch is in the Bag* handouts did you read?

a) All pages of all 5 handouts.
b) Most pages of several of the handouts.
c) All or nearly all of the first few handouts but less of the later ones.
d) A few pages of a few of the handouts.
e) Did not read any of the handouts.
f) Did not receive any *Lunch is in the Bag* handouts.

3. Please rate the following parts of the handouts. Mark "don't recall" if you don't remember seeing or reading it.	Excellent	Good	Fair	Poor	Don't recall
Pictures and charts:					
• MyPyramid for Kids	☐	☐	☐	☐	☐
• Recommended serving sizes of common foods	☐	☐	☐	☐	☐
• Keeping foods at safe temperatures	☐	☐	☐	☐	☐
• Vitamins and Minerals	☐	☐	☐	☐	☐
Information about:					
• Whole grains	☐	☐	☐	☐	☐
• Fruits	☐	☐	☐	☐	☐
• Vegetables	☐	☐	☐	☐	☐
• Reading food labels and ingredients lists	☐	☐	☐	☐	☐
• Packing a safe lunch	☐	☐	☐	☐	☐
• Making lunch fun & appealing for your child	☐	☐	☐	☐	☐
• Stretching your grocery dollar	☐	☐	☐	☐	☐
• Trying new foods & cooking methods	☐	☐	☐	☐	☐
Health Facts	☐	☐	☐	☐	☐
Menu Ideas	☐	☐	☐	☐	☐
Suggestion for trying something new each week	☐	☐	☐	☐	☐

4. Please rate the following *Lunch is in the Bag* activity stations that were set up in the afternoons. Mark "don't recall" if you don't remember seeing or visiting the station.	Excellent	Good	Fair	Poor	Don't recall
Week 1: MyPyramid	☐	☐	☐	☐	☐
Week 2: Grains	☐	☐	☐	☐	☐
Week 3: Fruits	☐	☐	☐	☐	☐
Week 4: Vegetables	☐	☐	☐	☐	☐
Week 5: How do you grow?	☐	☐	☐	☐	☐

5. Please tell us how much your child talked to you about the classroom activities.	A Lot	Some	Very Little	Not At All	Don't Recall
MyPyramid placemat	☐	☐	☐	☐	☐
Lunch Colors	☐	☐	☐	☐	☐
Favorite Fruit Friday	☐	☐	☐	☐	☐
The Grain Train	☐	☐	☐	☐	☐
Great Grain Thursday	☐	☐	☐	☐	☐
Sink Those Germs!	☐	☐	☐	☐	☐
Favorite Family Meal	☐	☐	☐	☐	☐
Vitamin Vegetable Wednesday	☐	☐	☐	☐	☐
Sensory Fruit and Vegetables	☐	☐	☐	☐	☐

6. What parts of *Lunch is in the Bag* did you find most helpful?

7. What parts of *Lunch is in the Bag* did you find least helpful?

8. Which of the following best describes your overall impression of *Lunch is in the Bag*?

   a) It provided a lot of new information and helpful suggestions.
   b) There were a few new ideas and good suggestions.
   c) It mostly was review of information I already had, but it was good to be reminded.
   d) It may have helped other parents, but it wasn't useful to me.
   e) It wasn't at all helpful.

Thanks for your answers!

Teacher Summary Evaluation

Your answers to the following questions concerning *Lunch is in the Bag* will help us to evaluate the program. Thank you for your time.

1. When you received *Lunch is in the Bag* handouts at the teacher training session, how much did you read?

g) All pages of all 5 handouts.
h) Most pages of several of the handouts.
i) All or nearly all of the first few handouts but less of the later ones.
j) A few pages of a few of the handouts.
k) Did not read any of the handouts.
l) Did not receive any Lunch is in the Bag handouts.

2. Please rate the following parts of the handouts. Mark "don't recall" if you don't remember seeing or reading it.	Excellent	Good	Fair	Poor	Don't recall
Pictures and charts:					
• MyPyramid for Kids	☐	☐	☐	☐	☐
• Recommended serving sizes of common foods	☐	☐	☐	☐	☐
• Keeping foods at safe temperatures	☐	☐	☐	☐	☐
• Vitamins and Minerals	☐	☐	☐	☐	☐
Information about:					
• Whole grains	☐	☐	☐	☐	☐
• Fruits	☐	☐	☐	☐	☐
• Vegetables	☐	☐	☐	☐	☐
• Reading food labels and ingredients lists	☐	☐	☐	☐	☐
• Packing a safe lunch	☐	☐	☐	☐	☐
• Making lunch fun & appealing for your child	☐	☐	☐	☐	☐
• Stretching your grocery dollar	☐	☐	☐	☐	☐
• Trying new foods & cooking methods	☐	☐	☐	☐	☐
Health Facts	☐	☐	☐	☐	☐
Menu Ideas	☐	☐	☐	☐	☐
Suggestion for trying something new each week	☐	☐	☐	☐	☐

3. Please rate the following *Lunch is in the Bag* activity stations that were set up in the afternoons. Mark "don't recall" if you don't remember seeing or visiting the station.	Excellent	Good	Fair	Poor	Don't recall
Week 1: MyPyramid	□	□	□	□	□
Week 2: Grains	□	□	□	□	□
Week 3: Fruits	□	□	□	□	□
Week 4: Vegetables	□	□	□	□	□
Week 5: How do you grow?	□	□	□	□	□

4. Please rate the value of each component of *Lunch is in the Bag* to the overall program.	Very Beneficial	Somewhat Beneficial	Not Beneficial	Detrimental
• Parent handouts	□	□	□	□
• Classroom activities	□	□	□	□
• Educational stations	□	□	□	□

5. From your perspective as a teacher, what is your perception of the following aspects of *Lunch is in the Bag*? :	Agree	Neither agree or disagree	Disagree
Increased nutrition knowledge of parents	□	□	□
Increased nutrition knowledge of children	□	□	□
Increased nutrition knowledge of center/school staff	□	□	□
Increased parent's awareness about the importance of nutrition	□	□	□
Engaged both the child and parent in nutrition education	□	□	□
Fit easily into the childcare/school curriculum	□	□	□
Fit within the childcare/school operations	□	□	□
Enhanced the childcare/school meal environment	□	□	□

7. Overall, do you feel that a majority of the parents were reached with this program? □ Yes □ No

8. What changes would you make in the program components?

_____

_____

_____

Thanks for your answers!

Child Care Center Director Summary Evaluation

Your answers to the following questions about *Lunch is in the Bag* will help us evaluate the program. Thank you for your time.

1. When you received *Lunch is in the Bag* handouts during the recruitment period, how much did you read?

m) All pages of all 5 handouts.
n) Most pages of several of the handouts.
o) All or nearly all of the first few handouts but less of the later ones.
p) A few pages of a few of the handouts.
q) Did not read any of the handouts.
r) Did not receive any Lunch is in the Bag handouts in the mail.

2 . Please rate the following parts of the handouts. Mark "don't recall" if you don't remember seeing or reading it.	Excellent	Good	Fair	Poor	Don't recall
Pictures and charts:					
• MyPyramid for Kids	☐	☐	☐	☐	☐
• Recommended serving sizes of common foods	☐	☐	☐	☐	☐
• Keeping foods at safe temperatures	☐	☐	☐	☐	☐
• Vitamins and Minerals	☐	☐	☐	☐	☐
Information about:					
• Whole grains	☐	☐	☐	☐	☐
• Fruits	☐	☐	☐	☐	☐
• Vegetables	☐	☐	☐	☐	☐
• Reading food labels and ingredients lists	☐	☐	☐	☐	☐
• Packing a safe lunch	☐	☐	☐	☐	☐
• Making lunch fun & appealing for your child	☐	☐	☐	☐	☐
• Stretching your grocery dollar	☐	☐	☐	☐	☐
• Trying new foods & cooking methods	☐	☐	☐	☐	☐
Health Facts	☐	☐	☐	☐	☐
Menu Ideas	☐	☐	☐	☐	☐
Suggestion for trying something new each week	☐	☐	☐	☐	☐

3. Please rate the following *Lunch is in the Bag* activity stations that were set up in the afternoons. Mark "don't recall" if you don't remember seeing or visiting the station.	Excellent	Good	Fair	Poor	Don't recall
Week 1: MyPyramid	☐	☐	☐	☐	☐
Week 2: Grains	☐	☐	☐	☐	☐
Week 3: Fruits	☐	☐	☐	☐	☐
Week 4: Vegetables	☐	☐	☐	☐	☐
Week 5: How do you grow?	☐	☐	☐	☐	☐

4. Please rate how well *Lunch is in the Bag*:	Excellent	Good	Fair	Poor
• Fit into the child care/school curriculum	□	□	□	□
• Fit within the child care/school operations	□	□	□	□
• Enhanced the child care/school meal/snack environment	□	□	□	□

5. Please rate the value of each component of *Lunch is in the Bag* to the overall program.	Very Beneficial	Somewhat Beneficial	Not Beneficial	Detrimental
• Parent handouts	□	□	□	□
• Classroom activities	□	□	□	□
• Educational stations	□	□	□	□

6. Which component if any would need to be changed?

_____
_____
_____

7. Please indicate the amount of positive impact of *Lunch is in the Bag* on:	Large Impact	Mild Impact	No Impact
• Parents	□	□	□
• Teachers	□	□	□
• Children	□	□	□

Thanks for your answers!

For Healthy Preschool Children:

Handout A

Lunch is in the Bag

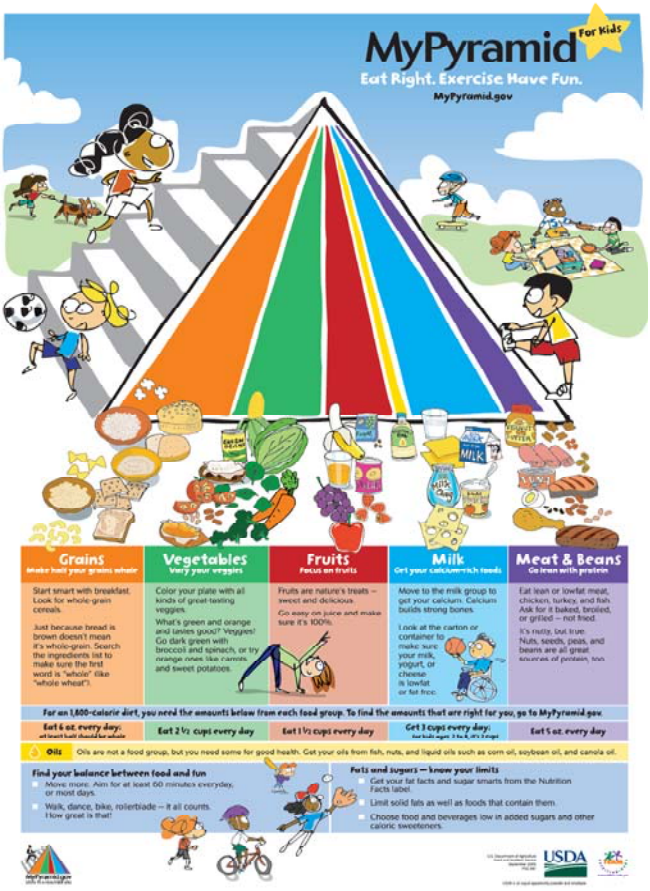
teaching life long eating habits

In a child's busy day of learning, playing and growing, lunch is an important meal.

A healthy and nutritious lunch will provide 1/4 to 1/3 of a child's energy and nutrient needs for the day.

Preschool years are a key time to teach your child healthy food habits.

Look inside the bag of a healthy lunch and you will find items from 4-5 food groups, including fruits, vegetables, whole grains, dairy and meat & beans foods.


MyPyramid
For Kids
Eat Right. Exercise Have Fun.
MyPyramid.gov
Grains
Make half your grains whole
Start smart with breakfast. Look for whole-grain cereals.
Just because bread is brown doesn't mean it's whole-grain. Search the ingredients list to make sure the first word is "whole" like "whole wheat".
Vegetables
Vary your veggies
Color your plate with all kinds of great-tasting veggies.
What's green and orange and tastes yuuu!? Veggies! Go dark green with broccoli and spinach, or try orange ones like carrots and sweet potatoes.
Fruits
Focus on fruits
Fruits are nature's treats – sweet and delicious.
Go easy on juice and make sure it's 100%.
Milk
Get your calcium-rich foods
Move to the milk group to get your calcium. Calcium builds strong bones.
Look at the carton or container to make sure your milk, yogurt, or cheese is lowfat or fat free.
Meat & Beans
Go lean with protein
Eat lean or lowfat meat, chicken, turkey, and fish. Ask for it baked, broiled, or grilled – not fried.
It's nutty, but true. Nuts, seeds, peas, and beans are all great sources of protein, too.
For an 1,600-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.
Eat 6 oz. every day;
Eat 2½ cups every day
Eat 1½ cups every day
Get 3 cups every day;
Eat 5 oz. every day
Oils
Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.
Find your balance between food and fun
Move more. Aim for at least 60 minutes everyday, or most days.
Walk, dance, bike, rollerblade – it all counts. How great is that!
Fats and sugars – know your limits
Get your fat facts and sugar smarts from the Nutrition Facts label.
Limit solid fats as well as foods that contain them.
Choose food and beverages low in added sugars and other caloric sweeteners.
USDA

Lunch is in the Bag

MyPyramid for Kids: a tool for parents

What foods should kids be eating?

MyPyramid for Kids uses colors to identify the different food groups. The five groups, Fruits (**red**), Vegetables (**green**), Grains (**orange**), Meat and Beans (**purple**), and Dairy (**blue**) are important parts of the pyramid. No single food group can provide all the nutrients that children need. Just like adults, children need a variety of foods every day.

How much should kids be eating?

Fruits	1 1/2 cups (2-3 servings)
Vegetables	2 1/2 cups (3-5 servings)
Meat & beans	5 ounces
Milk	3 cups
Grains	6 ounces (½ should be whole grains)

MyPyramid for Kids provides guidance that children should receive food from each group. A healthy and appealing lunch has servings from each food group. Knowing the total amount for the day will help you plan healthy meals for your child.

What about fats and sweets?

The pyramid messages remind you that a small amount (30-35% of daily calories) of fats and oils (yellow) are okay. But be careful! It is easy extra calories as fats and sweets to slip in as soda, fruit drinks, cookies, candy, chips, salad dressing and granola bars during the day!

Where does exercise fit in?

Anywhere! Physical activity should be a big part of the day for children of all ages. Taking a walk, going to the park or playing ball can be a fun family time. Healthy food choices supply the nutrients and energy to help kids play!

A-3

Lunch is in the Bag

mix and match from *MyPyramid for Kids*

Thinking about lunches in food groups makes it easy to ensure your child gets the nutrients he or she needs.

The goal is 1 serving from 4-5 food groups in each lunch:

The servings sizes below are for 3 year olds, in ( ) are servings for 4-5 year olds

- ¼ (½) sandwich 1 oz. (1½ oz.) turkey on ½ (1) slice whole wheat bread
- 4 (8) baby Carrots
- 2T (¼c) cup Raisins
- 4 oz. (6 oz.) fat-free milk

- ¼ (½) sandwich 1Tbsp Peanut or soy butter on ½ (1) slice of whole wheat bread
- ½ cup Pineapple tidbits
- 5 (10) cherry Tomatoes (cut in half)
- 4 oz. (6 oz) fat-free milk

- ¼ cup Bean and 1 oz. cheese burrito on ½ (1) small whole grain tortilla
- ¼ (½) Green bell pepper
- 2-3 (4-5) large Strawberries (cut up)
- 4 oz.(6oz) fat-free milk

Key:
- Meat and Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

A-4

Lunch is in the Bag

MyPyramid recommends the following small serving sizes for 2- to 3-year olds and 4- to 5-year olds. Serve small amounts more frequently.

Recommended Serving Sizes of Common Foods

	2-to3-year-olds	4-to 5-year-olds
	3-5 oz total (chose 6-10 of the following)	4-5 oz. total (choose 6-10 of the following)
Grains	½ slice bread ½ small tortilla ½ cup dry cereal ¼ cup cooked cereal, pasta, rice ½ small muffin 3 small crackers 2 graham crackers ¼ English muffin ½ mini bagel	1 slice bread 1 small tortilla 1 cup dry cereal ½ cup cooked cereal, pasta, rice 1 small muffin 6 small crackers 4 graham crackers ½ English muffin 1 mini bagel or ¼ regular one
Vegetables	1-11/2 cups (choose 4-6 of the following) ¼ cup chopped raw vegetables ¼ cup cooked vegetables ½ cup raw leafy greens	11/2-2 cups (choose at least 3-4 of the following) ½ cup chopped raw vegetables ½ cup cooked vegetables 1 cup raw leafy greens
Fruits	1-11/2 cups (choose 2-4 of the following) ½ small whole fruit ½ cup canned or frozen fruit 2 Tablespoons dried fruit	11/2-2 cups (choose 3-4 of the following) 1 small whole fruit ½ cup canned or frozen fruit ¼ cup dried fruit
Milk	2 cups (choose at least 4 of the following) ½ cup milk 1/4ounce cheese ½ cup yogurt	2 cups (choose at least 3 of the following) ¾ cup milk 1 ounce cheese ¾ cup yogurt
Meat & Beans	2-4 ounces (choose 2-4 of the following) 1 ounce meat, poultry or fish (2 Tbsp) 1 egg ¼ cup cooked dried beans 1 Tablespoon peanut butter ¼ cup tofu ½ ounce chopped nuts or seeds	3-5 ounces (choose 3-5 of the following) 1 ounce meat, poultry or fish (2 Tbsp) 1 egg ¼ cup cooked dried beans 1 Tablespoon peanut butter ¼ cup tofu ½ ounce chopped nuts or seeds

A-5

Lunch is in the Bag

Health Facts

Most children establish food likes and dislikes before they enter kindergarten.

Learning to enjoy a variety of healthy foods during the preschool years will teach children good health habits throughout their lives.

A child commonly needs to be offered a small portion of a new food 9 to 15 times before they will accept it as a regular part of their diet.

Children learn from watching what their parents eat. Parents and caregivers are key role models.

The Dietary Guidelines for all Americans work for kids too:

- Eat a variety of foods from the basic food groups
- Eat the right amount to keep a healthy body weight
- Be physically active every day
- Choose fats wisely for good health
- Choose carbohydrates wisely for good health
- Increase daily intake of fruits, vegetables, whole grains, and low or non-fat milk and milk products
- Choose and prepare food with little salt
- Keep foods safe to eat

A- 6

Lunch is in the Bag

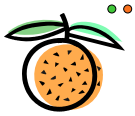
menu ideas for the week ahead

- 1 Peanut Butter & Banana sandwich on whole grain bread
- Cucumber circles
- Fat free milk

- Spaghetti with meat & tomato sauce
- Kiwi slices
- Part skim String cheese
- water

- 1 Roast Beef sandwich on whole grain bread
- Zucchini rounds
- Papaya
- Fat free milk

- Ham strips
- Small bran muffin
- Low or fat free Yogurt
- Apple slices
- Snow peas
- water



- Small whole wheat Pita with Hummus & Lettuce
- Orange wedges
- Broccoli florets
- Fat free milk

Key:

- Meat and Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

TRY SOMETHING NEW…

This week try to do one or more of the following:

- Pack a minimum of 4 food groups per lunch
- Try to include two lunches with all 5 food groups
- Identify 3 fruits to have on hand to include in lunches

Helpful hint: If your child care center offers milk at lunch, request that your child gets it! This is an easy way for your child to get a serving from the "dairy" group.

A-6

Lunch is in the Bag

Some helpful resources

More information about making healthy food choices for you and your family Can be found at: http://www.mypyramid.gov.

http://www.bcm.edu/cnrc/resources/kids.html

http://nourishinteractive.com/

http://www.ext.nodak.edu/food/kidsnutrition/kids-2.htm

http://www.dole5aday.com/#banana

For recipe ideas log onto: http://reciperfinder.nal.usda.gov.

Lunch is in the bag is a multi-component nutrition education program designed for parents who pack lunches for their preschool age children. These handouts were put together in order to provide parents with knowledge and suggestions to help choose healthy foods and pack appropriate portions in a safe manner.

The author acknowledges the cooperation of Shirley Peterson RD and the Extension office of the University of California Agriculture and Natural Resources

Lunch is in the Bag

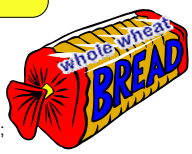
but read the label first!

Nutrition labels provide important information about the food items you buy. They can be very helpful in selecting healthy foods for your family.

The ***Ingredient List*** and the ***Nutrition Facts*** are two parts of the food label that you can use to make wise food choices.

Lunch is in the Bag

Ingredient Lists



The **Ingredient List** is always found on the outside of the food package. Food ingredients are listed in order of the amount that is in the food. The ingredient with the greatest weight is listed first; the ingredient with the least weight is listed last.

Look at this **Ingredient List** from a loaf of **whole-wheat bread**:

Ingredients: **whole** wheat flour, water, wheat gluten, brown sugar, molasses, soybean oil, honey, yeast, salt cultured wheat starch, oats, soy flour, dough conditioners.

Compare this **Ingredient List** from a loaf of **wheat bread:**

Ingredients: **enriched** wheat flour, water, high fructose corn syrup, wheat bran, soybean oil, molasses, wheat gluten, salt, whey, calcium sulfate, dough conditioners.

What ingredient is in each bread in the largest amount?

Whole wheat flour is present in the largest amount in the whole wheat bread and **enriched wheat flour** in the wheat bread.

Which loaf of bread is made of whole grains?

The first loaf that is made of **whole wheat flour and** is considered a whole grain food. The enriched wheat flour in the second loaf is also known as **white** flour.

Helpful Hint:
When the **Ingredient List** is very long, the first two or three ingredients usually make up most of the product.

B-2

Lunch is in the Bag

let's look at some terms

Whole Grain: Whole grains contain the bran and germ. Whole grains provide more **dietary fiber**, **B vitamins** and **energy**.

Whole Wheat: Whole wheat means that the whole kernel was kept in the processing to flour.

Wheat or White bread: The bran and germ of the kernel are removed in these products. If it is enriched Flour, **B vitamins** and **minerals** are added back to the flour. But, **dietary fiber** cannot be added back.

White Whole-Wheat bread: White whole-wheat bread looks and tastes like white bread but has the same nutritional benefits as regular whole wheat bread. The difference between white whole-wheat bread and regular whole wheat bread is the color of wheat used.

Common Whole Grains:

oatmeal brown rice
barley buckwheat
popcorn wild rice
whole wheat

When choosing bread, crackers, pasta and cereal look for these whole grains in the Ingredient List.

Be a whole grain detective!

Check the cereal, crackers, bread and pasta in your pantry at home. Look for terms like "whole grain oats" and "whole grain wheat' in the **Ingredient List.** How many can you find?

Health Fact:

One half of children's grain servings should come from whole grains. Whole grains add dietary fiber that may help lower cholesterol and reduce the risk of some types of cancer.

Helpful Hint:

To help your child learn to enjoy whole grain bread, try making the sandwich with one slice white and one slice whole wheat.
This will give them time to like the taste of whole grain bread.

B-3

Lunch is in the Bag

What is in that juice box?

Read the **Ingredient List** on the label to see if the box contains 100% juice.

Other names like fruit drinks, fruit-aides, and fruit punch are made from suga and water. Many fruit drinks only contain 10% juice. They do not have all the nutrients commonly found in a natural juice.

Fruit bits Fruit Rolls Fruit Snacks

The names may sound healthy but these are often made with a little fruit juice and a large amount of sugar. Read the **Ingredient List** before you buy them. Children like the natural sweetness of real fruit which is the healthier choice for your child.

About those granola bars….

A Riddle:
Q: When is a granola bar not a granola bar?
A: When it is pretending to be a candy bar!

Can you guess which Ingredient List is from the granola bar?

1. Milk chocolate (made from sugar, cocoa butter, chocolate, lactose, skim milk, milkfat, soy lecithin, artificial flavor), peanuts, corn syrup, sugar……

2. Milk chocolate (made from sugar, cocoa butter, chocolate, lactose, skim milk, milkfat, soy lecithin, vanillin), peanuts corn syrup, sugar, milk….

2 is from the granola bar. And the Ingredient List has not even mentioned any cereal or grain yet.

Did you notice the same ingredients in the two labels? Many granola bars contain sugar and fat but few nutrients. Read the label!

B- 4

Lunch is in the Bag

know what you are getting along with the yogurt

Yogurt can be a good choice from the dairy group. The smaller child size portions can be a good option for young children.

Keep an eye on the: **FAT** – look for low-fat or fat-free yogurt

and

SUGAR – compare the amount of sugar between yogurt with fruit and flavored choices like lemon or vanilla.

Sodium

Read the Nutrition Facts for sodium. Some foods are naturally higher in sodium while processing adds sodium to others. It is okay to use some higher sodium foods occasionally in your child's lunch.

Simple Rule: If lunch contains a high sodium food make sure dinner does not.

Sugar has many names.
Look for these names that mean the same as sugar.

Ingredient Lists may list sugar as:

Brown sugar	Invert sugar	Evaporated cane syrup
Corn syrup	Malto-Dextrin	
Corn sweeteners	Molasses	
High-fructose corn syrup	Natural sweetener	
Honey	Sugar	

Any ingredient ending in ose – (such as dextrose, lactose , fructose)

Health Fact:

Sugar is an **empty calorie** food. It does not provide any vitamins or mineral, just energy.

How many sugars are in the following Ingredient List?

Unbleached wheat flour, butter, sugar, corn syrup, eggs, dextrose, nonfat milk, baking soda, cream of tartar

Answer: Three: sugar, corn syrup, dextrose

B-5

Lunch is in the Bag

The Nutrition Facts Label

The Nutrition Facts Label provides nutrition information about the food item.
Some of the key information is:

1) Serving size
2) Amount of fat, trans fats, cholesterol and sodium
3) Amount of carbohydrates, including dietary fiber and sugar
4) Amount of protein
5) Amount this food provides in the daily needs for Vitamin A, Vitamin C, calcium and iron (some labels list additional nutrients in this section)

This information may help you decide if a food item is a healthy choice. Let's look at the three labels below. If you were trying to find a lower-fat choice to regular potato chips, look at the "Calories" and "Calories from Fat".

Regular Potato Chips

Nutrition Facts	
Serving Size 30g (about 20 chips)	
Servings Per Container 6	
Amount Per Serving	
Calories 160 Calories from Fat 100	
	% Daily Value
Total Fat 11g	17%
Saturated fat 4g	18%
Trans fat 0g	

Baked Potato Chips

Nutrition Facts	
Serving Size 1 oz (28g/about 10 chips)	
Servings Per Container 6	
Amount Per Serving	
Calories 120 Calories from Fat 30	
	% Daily Value
Total Fat 3g	5%
Saturated fat 0g	0%
Trans fat 0g	

Mini Pretzel Twists

Nutrition Facts	
Serving Size 22 pieces (28g)	
Servings Per Container 15	
Amount Per Serving	
Calories 110 Calories from Fat 10	
	% Daily Value
Total Fat 1g	1%
Saturated fat 0g	0%
Trans fat 0g	

The serving size is similar in each product 28-30 grams.

Which food is the healthier choice?

The mini pretzels provide less calories (110) and less grams of fat (1g) per serving. They would be the healthiest choice.

Remember, these are adult serving sizes. I don't need as much.

Begin to teach your child to read labels. As they recognize words and numbers they can learn about the amounts of sugar and fat.

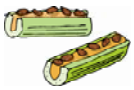
B-6

Lunch is in the Bag

menu ideas for the week ahead

- Split pea with ham soup
- Whole wheat crackers
- Celery sticks with low or fat free cream cheese
- Blueberries
- Low or fat free yogurt

- 1 Tuna* salad sandwich on Whole Wheat bread with 1 T fat free mayonnaise
- Baby carrots
- Plum
- Fat-free milk or soy milk



- Butternut Squash soup
- Whole wheat pita with hummus
- Cantaloupe wedges
- Fat free milk or soy milk

- Baked Chicken leg
- Brown rice
- Green beans
- Grapes (cut in half)
- Part skim String cheese
- water

Kids like **celery** with fillings and **raisins** on top!

- Leftover meatloaf or other lean meat
- Whole wheat roll
- Baked sweet potato chunks
- Low or fat free Yogurt
- Dried cranberries

*__Light tuna packed in water__ is a safe Low-cost option for young children

Key:
- Meat & Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

TRY SOMETHING NEW…

This week try to do one or more of the following:

- Introduce your child to a new whole grain bread.
- Plan to use the leftovers of one dinner meal for your child's lunch.
- Identify 3 vegetables to have on hand regularly to pack in lunches.
- When you shop, read the labels. Compare one processed item or one snack item that you usually purchase to other choices to find a healthier product.

B-7

Lunch is in the Bag

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Lunch is in the Bag

let's make sure it's safe!

Packing a safe lunch is just as important as packing healthy foods.

Children under the age of 5 are at high risk for foodborne illness (food poisoning caused by bacteria)

Type of Food

Temperature

Time

The 3 keys to packing a safe lunch are:

- **Type of Food:** know the foods that spoil easily
- **Temperature:** store foods out of the danger zone
- **Time:** be aware of how long foods are in the danger zone

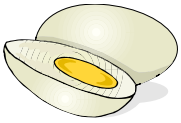
Lunch is in the Bag

keeping lunch foods at safe temperatures

Bacteria grow rapidly in many foods. Meat, poultry, fish, dairy products, soft cheese (such as cottage cheese), and cut fruits and vegetables can contain foodborne bacteria. Be sure to pack all foods safely.

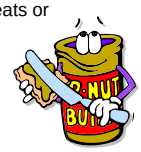
Keep these foods cold:

- Meat, poultry, fish
- Eggs
- Milk, soft cheese, yogurt
- Peeled or cut fruits and vegetables
- Pasta salad



These foods are safe at room temperature:

- Bread, crackers, cereal
- Peanut butter
- Whole fruit and vegetables (not cut or diced
- Unopened canned fruit
- Dried fruit
- Unopened juice boxes
- Hard cheese, nuts, and seeds
- Unopened cans of tuna meats or poultry



Keep these foods all hot or all cold

- Soup
- Chili
- Casseroles
- Refried or baked beans
- Spaghetti with meat sauce

C-2

Lunch is in the Bag

keep hot foods hot and cold foods cold

TIME

Bacteria that cause foodborne illness grow rapidly

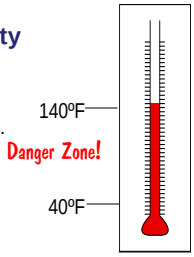
Food can become unsafe to eat in just 2 hours if left at room temperature.

Foods held at room temperatures above 90ºF can become unsafe in 1 hour.

Temperature Guide to Food Safety

Perishable food held in the Danger Zone (40ºF -140ºF) are subject to rapid growth of bacteria that can cause foodborne illness.

Keep foods either above 140ºF or below 40ºF. High temperatures kill bacteria and low temperatures slow their growth.



Health Facts:

One person in four living in the United States will have a foodborne illness this year. Common food poisoning symptoms are nausea, vomiting and diarrhea. In severe cases, people can die.
Children are more susceptible to foodborne illness than adults due to their small size and immature immune system.
Unpasteurized milk and juices are not safe.
They can be sources harmful bacteria like E. coli.

C-3

Lunch is in the Bag

Follow these guidelines to keep foods safe

Keep It Clean

Every day:

- *Wash your child's lunch box or bag inside and out*
- *Wash ice packs*

Before you prepare food:

- *Wash your hands.*
- *Clean cutting boards*
- *Clean food counters*
- *Wash utensils*

Keep It Cool

Every day:

- *Use an insulated lunch box or bag*
- *Use 2 ice packs*
- *Pack a chilled sandwich – store it overnight in the refrigerator*
- *Use a refrigerator at your child's school to store the lunch if available.*

Keep it Hot

Use an insulated container to send hot foods.

1)First, fill the insulated container with boiling water.
2)Then let it stand for a few minutes.
3)Empty the water out and add the very hot food.

~These tips allow you to~

Pack a safe lunch for your child
&
Send a greater variety of foods in your child's lunch

C-4

Lunch is in the Bag

packing a safe lunch

Packing a safe lunch is easier than you think! Here are some examples:

Example 1

- baked chicken leg
- cucumber slices
- cantaloupe cubes
- oatmeal muffin
- low or non-fat milk

Which foods in this lunch need special handling?

Answer: Chicken, cut vegetables cut fruit, and milk

Tip:
Place the milk in an insulated container and pack the entire lunch in an insulated lunch box with 2 frozen ice packs.

Example 2

- leftover spaghetti and meat sauce
- dried apricots
- low or non-fat milk

Which foods in this lunch needs special handling?

Answer: Spaghetti with meat sauce, and milk.

Tip:
Heat the spaghetti and meat sauce and put it into an insulated container. Or, send the cold spaghetti and meat sauce in an insulated lunch box with 2 ice packs. Put the milk in an insulated bottle.

Example 3

- ½ peanut butter sandwich on whole wheat bread
- low or fat free yogurt
- baby carrots
- 100% orange juice box

Which foods need special handling?

Answer: Yogurt and the baby (peeled) carrots

Tip:
Pack in an insulated lunch box or bag with 2 frozen ice packs.

Example 4

- bean and cheese burrito
- sliced strawberries
- 6 oz can of tomato juice

Which foods need special handling?

Answer: Burrito and cut strawberries

Tip:
Make and store the burrito overnight in the refrigerator. Pack in an insulated lunch box with 2 frozen ice packs. The burrito can safely be eaten cold or reheated. The sliced strawberries should be packed in the insulated bag.

C-5

Lunch is in the Bag

tips from the preschool staff

" A local pharmacy gives me ice packs that come packed with prescriptions. They work great for keeping lunches cold."

-Preschool Director

"It's important that parents get in the habit of using ice packs."

-Preschool Teacher

"Ice packs should be used even on cold days"

- Preschool Director

"We let children and parents know that lunches can be stored in our refrigerator. All schools can't offer that, but since we can, we want our families to use the refrigerator."

- Preschool Aide

Another Safety Consideration:

CHOKING

The American Red Cross indicates that round, small, dry, or hard foods and sticky or tough foods are common causes of choking.

Foods likely to cause choking are:

Whole hot dogs
Whole grapes, cherries and cherry tomatoes

Whole nuts
Spoonfuls of peanut butter

Chunks of food like meat or fruit
Hard candy or lollipops
Chewing gum
Popcorn

To reduce choking hazards:

Cut hot dogs into quarters lengthwise
Cut grapes, cherries, and cherry tomatoes in half
Chop nuts
Spread peanut butter thinly on bread, crackers, or vegetables
Slice or chop chunks of food
Hard candy, lollipops, chewing gum and popcorn should not be served to children under 5 years old.

C-6

Lunch is in the Bag

menu ideas for the week ahead

- Egg salad sandwich on whole grain bread with 1 T fat free mayonnaise
- Part skim String cheese
- Corn (leftover)
- Lychee

- Cottage cheese (low or fat free)
- with grapes (cut in half)
- beans
- Whole wheat tortilla
- Zucchini rounds

- Black bean soup
- Whole grain crackers
- Green pepper rings
- Watermelon chunks
- Fat-free milk

- Leftover macaroni and cheese
- Cashew butter on celery
- Half of peach
- Fat-free milk

Kids like **green beans** that snap!

- Couscous salad with small chicken bites
- Low or fat free yogurt
- ½ pear
- Tomato wedges

Key:
- Meat & Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

TRY SOMETHING NEW…

This week try to do one or more of the following:

- Purchase at least 2 ice packs and store them in the freezer and use them in your child's lunch.
- Purchase an insulated lunch box or bag for your child if needed.
- Purchase an insulated container or thermos for hot foods, if needed.
- Make your child's sandwich or burrito the night before and store it in the refrigerator.
- Read the labels and compare a different regularly purchased item with another brand.

C-7

Lunch is in the Bag

Some helpful resources

More information about making healthy food choices for you and your family Can be found at http://www.mypyramid.gov.

http://www.bcm.edu/cnrc/resources/kids.html

http://nourishinteractive.com/

http://www.ext.nodak.edu/food/kidsnutrition/kids-2.htm

http://www.dole5aday.com/#banana

For recipe ideas log onto: http://reciperfinder.nal.usda.gov.

Lunch is in the bag is a multi-component nutrition education program designed for parents who pack lunches for their preschool age children. These handouts were put together in order to provide parents with knowledge and suggestions to help choose healthy foods and pack appropriate portions in a safe manner.

The author acknowledges the cooperation of Shirley Peterson RD and the Extension office of the University of California Agriculture and Natural Resources

For Healthy Preschool Children: Handout D

Lunch is in the Bag

and it is appealing to both of you!

Make the lunch you pack appealing to your child. This will encourage them to try the healthy food you prepare for them.

Ask your child what fruit or vegetable he or she likes.

Ask what whole grains your child wants in his or her lunches.

You are busy parents, and grocery dollars do not stretch far. Inside are some suggestions that will make both you and your child happy at lunch time.

Lunch is in the Bag

make lunch fun

Children like to eat food that is interesting.
Using lots of colors, flavors, textures and shapes makes lunches more tempting.

Color: Include fruits and vegetables from at least two colors from the rainbow.

Texture: Include something crunchy or crisp (fresh fruits and vegetables, chopped nuts, or crackers) and soft foods (breads, lunch meats, rice, pasta, bananas and cooked vegetables).

Flavors: Think of the different foods your child might like. Each week select a variety of flavors for sandwich fillings, breads, fruits, vegetables, and cheeses.

Shapes: Perk up a lunch box by cutting sandwiches and other foods into strips, circles, or triangles. Consider adding foods that naturally come in interesting shapes like broccoli "trees," cauliflower "clouds," and sliced bell pepper "rings".

Two Points to make it Easier for You:

Keep the food simple.

Simple and easy-to-eat foods interest young children. Packaging food that children can open and eat easily helps to develop self confidence and independence.

Small Serving Sizes:

Serving sizes should be small. Children can consume only small amounts of food. The amount of food needed daily will depend on the activity and growth rate of your child.

Health Fact:
When you pack more than one serving of fruit and vegetable in their lunch, children are learning that a healthy lunch should have these food groups. Research shows that when children learn this at a young age, they are more likely to eat this way as they get older.

D-2

Lunch is in the Bag

Do your own prepackaging

Buy in bulk (pretzels and crackers) and prepackage the foods in small bags for several days to use in lunches and as snacks. When your child wants a snack at home, an age appropriate serving is ready for them.

This idea can work for leftovers as well. As you clean up from dinner, prepackage the child's lunch and store it in the refrigerator for the next day's lunch. This can make packing vegetables and meat easy and inexpensive.

For fruits such as oranges, pears or peaches you only need to pack 1/2 for your child. So pack the other half for you for a healthy mid-morning snack!

Bake some whole grain muffins that kids will love (bran with raisins, banana oatmeal, or pumpkin whole wheat). Wrap them individually and either keep them in the refrigerator for lunches that week or put them in the freezer for later. This saves money and allows you to control the portion size.

Children like to eat fruits and vegetables!

The fruits most enjoyed by children are *oranges, apples and bananas*

The **vegetables** most enjoyed by children are *potatoes, lettuce, corn and carrots.*

Children often like what parents like. When you model enjoyment of the fruit and vegetables you like, your child will learn to like them too.

It is not uncommon for young children to go on food "jags", a time when a child eats very few foods. Do not worry, as this behavior usually only lasts a few days.

Do not worry if your child occasionally doesn't eat at a meal. Children should eat a balanced diet over a 3- to 4-day period.

D-3

Lunch is in the Bag

A few hints on stretching that grocery dollar…..

- The average price per serving of all types (fresh, frozen or canned) of fruit or vegetable is cheaper than many other starch or processed foods and a lot more nutritious.
- *Oatmeal* and *brown rice* are nutritious whole grains that children like. The nutrition you get per serving of foods made with these whole grains makes good "cents".
- The price of fresh produce is seasonal. Plan your meals with the foods in season. Choose produce that does not have soft or brown spots. Proper storage methods will help preserve foods.
- Snacks and desserts often take more money from your food budget than they give back in nutrients. Use them in the family meals and snacks occasionally as special treats.
- Buy store brands whenever possible. They must follow the exact same processing standards as the brand name items. Unless name brands are on sale store brands are often the best buy.
- Processed or prepackaged food cost more, but can save time. Decide if the time savings is worth the extra cost.

Look at the price of fruits and vegetables per serving!

Ex: 1 pound or 3 large bananas will provide 6 servings
or
1 pound or 2 medium peaches will provide 4 servings

Nutrients per serving make fruits and vegetables less expensive than many other foods!

Remember to shop with lunches in mind

D-4

Lunch is in the Bag

let's talk about those fats, sugars and condiments!

Fats: Oils, butter and margarine help to cook the food your family enjoys as well as add flavor. Small amounts are fine. But fats in the form of fried foods, large amounts of salad dressing and large pats of butter on cooked vegetables or bread adds excess fat to your meals.

Sugars: Sugar can be in processed products in many forms. Sweet foods taste good and make meals fun on special occasions. Help your child learn to enjoy naturally sweet flavors of 100% fruits juices with no sugar added and fresh fruits as part of a meal or snack. Even some vegetables, like corn and carrots, 2 of children's favorites, have a sweet hint of flavor from naturally occurring sugars.

Condiments: Condiments are designed to add or enhance flavor in foods. Some condiments, like soy sauce, are high in sodium. Encourage use of condiments in small amounts.

Small amounts of salad dressings and other condiments can make some foods more acceptable to your child.
Certainly feel comfortable using them.
Watch the serving size.

Try **hummus** as a healthy "dip" for vegetables!

D-5

Lunch is in the Bag

Make your own "lunchable"® meal!

Pita Pizza

1 small whole wheat pita
Small container of spaghetti sauce with meat
Thin slices of low fat mozzarella cheese
Sliced green pepper rings
100% grape juice

Make your own lunch combo for up to **half the price**!

Kids like these meals because they can build their own pizza or cracker stack.

You can put the pieces in the lunch bag and let your child put them together at lunch time.

Picnic Pack

Turkey, cut in squares
Low fat cheese, cut in squares
Whole grain crackers
Carrot sticks
Watermelon chunks

Often **fruits** and **vegetables** are missing From purchased meals.

You can make you own combinations that will be **healthy, economical** and best of all **fun**!

Ideas from Parents:

I always cut up fresh fruit in my children's lunches.
- Mother

The lunches I send are always stored in the refrigerator at the daycare.
-Mother

The kids frequently get leftovers from dinner the night before in their lunch the next day.
-Mother

Half a sandwich seems to be plenty for my 4-year old.
- Father

I always buy in bulk and prepackage small portions in small plastic bags ahead of time and keep them in a plastic container. It makes packing lunch easier and when they want a snack I don't have to worry about the amount they take.
- Mother

I ask my daughter what her favorite sandwiches, fruit, and vegetables are. That way I know she'll enjoy her lunch.
-Father

Lunch is in the Bag

menu ideas for the week ahead

- Tomato soup
- Peanut Cashew butter on Whole grain cracker
- Dry whole grain cereal
- Low or fat free milk or soy milk
- Mango

- Hard boiled egg
- Whole wheat roll
- Broccoli florets With fat free ranch dressing
- Papaya
- Fat-free milk or soy milk

- Leftover chicken and brown rice
- Frozen peas
- Cherries (cut in half)
- Fat-free milk or soy milk

- Leftover tofu and vegetables
- Raisins
- Low or fat free yogurt
- Whole grain crackers

- Cheese or tofutti cheese sandwich on Whole grain bread
- Pinto beans
- Cauliflower clouds
- Kiwi slices

Juicy **pineapple chunks** are a kid favorite

Key:
- Meat & Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

TRY SOMETHING NEW…

This week try to do one or more of the following:

- Pack 3 lunches this week that include 2 or more colors.
- Pack 3 lunches this week with 2 or more interesting shapes.
- Ask your child if they finish all their lunch.
- Ask for feedback about how much your son or daughter eats at school.
- Prepackage an item for the week (such as cutting in half grapes or cherry tomatoes).
- Include something that says “You are special” ….. a picture of the family or pet, note from home, colorful holiday napkin or sticker.

D-7

Lunch is in the Bag

Some helpful resources

More information about making healthy food choices for you and your family Can be found at http://www.mypyramid.gov.

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http://nourishinteractive.com/

http://www.ext.nodak.edu/food/kidsnutrition/kids-2.htm

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Lunch is in the Bag

let's look beyond the bag!

The 5 food groups from MyPyramid for Kids contain the foods that provide the energy nutrients like carbohydrates and proteins as well as vitamins and minerals.
They are all important for growth and energy needs.

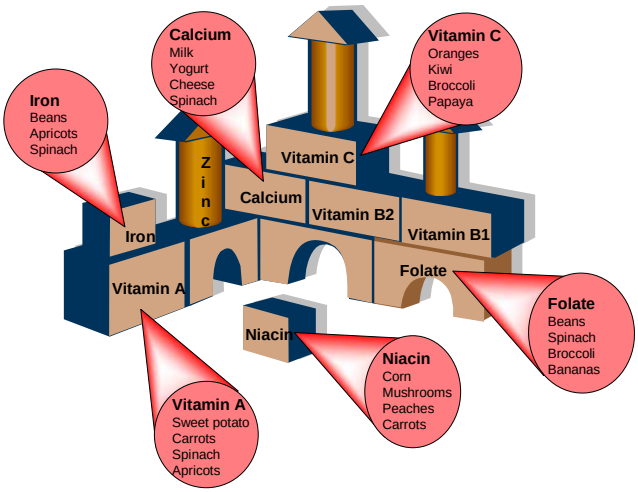
How you and your child choose foods throughout the day is important for overall health.

The preschool years are an important time to add new foods to your child's plate.

Lunch is in the Bag

Vitamins & Minerals

Your child needs all the different vitamins and minerals to build and maintain a healthy body. No single food provides all the nutrients we need. Eating a variety of foods, especially fruits, vegetables and whole grains, ensures your child will receive all the nutrients they need.



E-2

Lunch is in the Bag

Weigh the Benefits

Childhood **obesity** is a real concern in the United States. Over 17% of U.S. children and adolescents are obese, almost 14% of just 2-5 year olds.

Obesity develops over time and is a combination of poor food choices, too much food and too little exercise.

The eating and exercise habits you teach your preschool child now will help them be healthy throughout their lives. Even the lunch you pack is teaching them food habits that they will keep through adolescence into adulthood.

Diet and exercise habits have also been linked to **Cancer, Heart Disease** and **Diabetes**. Like obesity they develop over time.

Public Health professionals are seeing more signs and symptoms of these diseases occurring earlier when a child is obese.

Healthy habits should start early and YOU are the best model your child has!

E-3

Lunch is in the Bag

Introduce 

foods.

Introducing new foods can be a positive experience to you and your child. Remember that children commonly need to taste a new food 9-15 times. The new food can be in different forms. Family dinner is a good time to introduce new foods. The following suggestions may help.

- ☆ Introduce only one new food at a time. Offer a very small amount (one or two bites) of the new food at first, so that a child learns new flavors and textures.
- ☆ Offer new foods at the beginning of the meal when children are hungry. Also, let children have plenty of time to look at and examine the new food.
- ☆ Offer new foods to children when they are healthy and have a good attitude.
- ☆ Display a positive attitude when introducing a new food. Children will pick up on adult attitudes toward foods.
- ☆ Serve the new food with a familiar food. Point out the similarities between the two foods.
- ☆ Expect the new food will be liked.
- ☆ Praise the children when they try a new food.

Be
Fruit & Vegetable
Explorers!
Have your child pick out
a new fruit or vegetable
for the whole family
to try!

E-4

Lunch is in the Bag

Cook food in a different way.

Vegetables: Steaming
Sautéing in a little olive oil
Oven baking beet or sweet potato chunks
Sprinkle toasted sesame seeds, parmesan cheese or dill on vegetables
Use the butter flavored spray to add a little extra flavor
Try a vegetable raw instead of cooked

Fruit: Sautéing apple slices with spinach
Add dried cranberries or strawberries to salads
Cut up an apple or pear into the salad
Cook pineapple chunks with pork or chicken

Train your child and yourself to think of fruit and vegetables first for snacks.

Children usually have a few fruits and vegetables that they like to eat. Keep those on hand. While it is important to encourage a child to eat a variety of foods, eating 3-4 servings of a favorite fruit or vegetable in one week is perfectly acceptable.

Other things to know…..

It is not uncommon for young children to go on food "jags", a time when a child eats very few foods. Do not worry, as this behavior usually only lasts a few days.

Do not worry if your child **occasionally** doesn't eat much at a meal. Children should eat a balanced diet over a 3- to 4-day period.

E-5

Lunch is in the Bag

Encourage your child to help in the kitchen

Encouraging your child to help in the kitchen will help them develop self-help skills, an interest in the food they eat, and give you quality time with your child.

Young children can help with chores in the kitchen such as:

- setting the table,
- getting small or lightweight items out of the refrigerator for you,
- arranging fruit or vegetables you have sliced on a plate.
- If you are coating chicken in shredded cheese before baking it, they can do that.

Be sure to have them wash their hands well before helping you and remind them that being careful about keeping things clean in the kitchen helps keep the family healthy.

Create your own trail mix

Trail mix is a great snack item made of nutritious foods that can reflect what your family likes to eat.

Here is a recipe for Trail Mix, but you can use other ingredients. (1 serving)

¼ cup toasted oat cereal
2 Tablespoons raisins
1 Tablespoon sunflower seeds (shelled)
5 pretzel sticks.

Place all ingredients in a plastic bag. Seal the bag and shake.

Other items that you might use:

Other chopped dried fruit (like blueberries)
Other unsweetened whole grain cereal
Other seeds (roasted pumpkin) or nuts (chopped, depending on age)
Other small baked snack items, like a small cracker.

*** This makes a great snack to have packed for the car ride home ***

E-6

Lunch is in the Bag

menu ideas for the week ahead

- Turkey sandwich on
- Whole grain bread
- Fat free ranch dressing
- Red pepper rings
- Honeydew chunks
- Low fat or fat free yogurt

- meatloaf sandwich on
- Whole grain bread
- Zucchini sticks
- Peaches
- Fat-free milk or soy milk

- Chicken noodle soup
- Whole grain crackers
- Snow peas
- Orange sections
- Low fat or fat free yogurt

- Leftover macaroni & beef in
- Tomato sauce
- Dry whole grain cereal
- Apple slices
- Fat free milk or soy milk

- Leftover salmon chunks
- Whole wheat rolls
- Beet chunks (oven roasted, leftover)
- Kiwi slices
- Fat-free milk or soy milk

Kids like **fresh vegetables** with a little salsa!

Key:
- Meat & Beans group
- Dairy group
- Vegetables group
- Fruit group
- Grain group

TRY SOMETHING NEW…

This week try to do one or more of the following:

- Plan one meal with items that your child can help you prepare.
- Pick one new food to introduce into your child's diet.
- Begin to teach your child to read labels. As they recognize words and numbers they can learn about the amounts of sugar and fats.
- Using cookbooks you have at home, plan a meal that allows you to cook one vegetable in a new way.

E-7

Lunch is in the Bag for the week ahead:

Dear Parents:

Next week your child's class will be doing some nutrition education activities. This first week we will be doing the following:
MyPyramid MyPlacemat – The children will make a placemat by coloring the Food Guide pyramid. When laminated, this placemat will guide the children as they learn to classify foods by the food groups

Lunch Colors – The children will identify their foods in their lunches by their colors.

Friday: Favorite Fruit Friday - each child and teacher will bring their favorite fruit in for morning snack. Please remember to send in a favorite fruit with your child.

Book: "Oliver's Fruit Salad"

Lunch is in the Bag for the week ahead:

Dear Parents:

Next week your child's class will be doing some nutrition education activities. This first week we will be doing the following:

The Grain Train – the children will be building a "grain Train" around the room. We will talk about whole grains and the children will bring in empty boxes or bags of whole grain foods: bread, cereal, crackers to help make the "cars." We will mount the cars on the wall and try to build our grain train across the wall.

** Please send in any empty packages of whole grain cereal or crackers**

Lunch Colors – The children will identify their foods in their lunches by their colors.

Thursday: Great Grain Thursday - Each child and teacher will bring their favorite whole grain food in for morning snack. Please remember to send in a favorite whole grain food with your child.
Book: "Goldilocks and the Three Bears"

Lunch is in the Bag for the week ahead:

Dear Parents:

Next week your child's class will be doing some nutrition education activities. This week we will be doing the following:

Sink Those Germs – the children will play a game of tossing bean bags into a bucket. Each bean bag will correspond with a time during the day they should wash their hands.

Lunch Colors – The children will identify their foods in their lunches by their colors.

Book: "Eating the Alphabet"

Lunch is in the Bag for the week ahead:

Dear Parents:

Next week your child's class will be doing some nutrition education activities. This week we will be doing the following:

Favorite Family Meal – the children will draw and color on a paper plate their favorite family meal. We will prompt them to be sure to add a fruit, vegetable and grain

Lunch Colors – The children will identify their foods in their lunches by their colors.

Wednesday: Vitamin Vegetable Wednesday – All the children and teachers will bring in a favorite vegetable to eat together for morning snack. Please remember to send in a favorite vegetable with your child.

Book: "Growing Vegetable Soup"

Lunch is in the Bag for the week ahead:

Dear Parents:

Next week your child's class will be doing some nutrition education activities. This week we will be doing the following:

Mystery Fruits and Vegetables – the children will be able to feel and smell different fruits and vegetables that are in paper bags but not see them. They will then be asked to guess the fruit or vegetable that was in the bag.

Lunch Colors – The children will identify their foods in their lunches by their colors.

Book: "This is the Way We Eat Our Lunch"

Handout A, Week 1

Classroom Activity #1

MyPyramid, MyPlacemat

Description: Learn the different food groups in My Pyramid and practice classifying them at lunch time

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Materials: large sheets of white or cream construction paper
crayons or markers: red, blue, green, orange, purple and yellow
mini-poster of MyPyramid for Kids
rulers
access to a laminating machine

Activity: Draw a replica of My pyramid on the construction paper. Have children color in the sections as seen in MyPyramid. Have the children print their names in the upper right corner.

Run the placemats through the laminating machine. Use the placemats at lunch time. Encourage children to unpack their lunches and place the foods on the correct food group. The placemats can be wiped clean and used on regular basis.

Handout A, Week 1

Classroom Activity #2

Lunch Colors

Description: Children will learn to Identify foods, specifically fruits and vegetables, by their colors.

Materials: Sheet of laminated construction paper that has labeled squares of primary colors

Activity: While the children are eating their lunch, the teacher will quietly move around the room and ask each child to identify the color and the food name they have in their lunch that day.

Handout A, Week 1

Classroom Activity #3

Oliver's Fruit Salad

Materials: Book: "Oliver's Fruit Salad" by _____
Guided questions.

Activity: In circle time the teacher will read aloud "Oliver's Fruit Salad. As she/he reads, show the pictures each fruit. After the book ask the children:

Can you name all of the fruits that were in the fruit salad?

What were some of the colors of the fruit?

What was your favorite fruits?

What would be a fruit you would like to try?

Additional discussion would include:

Fruits gives us vitamins and minerals. Vitamin C helps to keep us from getting sick. Vitamin A helps to keep our skin and eyes healthy.

Handout A, Week 1

Classroom Activity #4

Favorite Fruit Friday

Description: Each child and teacher will bring in a favorite fruit on Friday to all eat together for snack.

Materials: Note to go home to parents on Monday explaining the activity.

Activity: On Friday everyone in the class will bring in a favorite fruit snack item to eat together at snack time.

Handout B, Week 2

Classroom Activity #1

The Grain Train

Description: The children will help construct a grain train across the wall Made of "cars" from empty boxes from whole grain cereal and crackers and bags from whole grain bread.

Materials: Construction paper pieces for the train engine
construction paper wheels to add under the boxes and bags that the children will bring in
2 empty boxes to get the train started.
pictures with words below of different whole grains
samples of simple Ingredient Lists
Note to go home to parents that tells them what to send in

Activity: Discuss with children that the class will build a Grain Train. In circle time talk about whole grains with the children. Show the pictures of different grains, discuss what foods are made with grains: cereal, bread, crackers, pancakes, waffles, tortillas, rice, pasta, muffins. Show Ingredient List that have the words "whole wheat flour" and "Whole Oats". Tell the children to bring in empty packages of whole grain products. Tape the Engine pieces up on the wall and stick up the first two "cars" and put the wheels under them. Tell the children we will see fast and how far the grain train can grow.

Handout B, Week 2

Classroom Activity #2

Lunch Colors

Description: Children will learn to Identify foods, specifically fruits and vegetables, by their colors.

Materials: Sheet of laminated construction paper that has labeled squares of primary colors

Activity: While the children are eating their lunch, the teacher will quietly move around the room and ask each child to identify the color and the food name they have in their lunch that day.

Handout B, Week 2

Classroom Activity #3

Goldilocks and the Three Bears

Description: Children will listen to and discuss a book that involves a grain food.

Materials: Book "Goldilocks and the Three Bears" by _____

Activity: At circle time the teacher will read "Goldilocks and the Three Bears" aloud to the children.

Guided questions:

What did Goldilocks eat at the bear's house?

What do you think porridge could be made of?

What other cooked cereals can you think of?

Which one is your favorite?

Further discussion: Cooked cereal like oatmeal and porridge is an example of a healthy breakfast food. What some other breakfast foods? Ask the children what they eat for breakfast with emphasis on healthy grain foods and eating a combination of food groups.

Handout B, Week 2

Classroom Activity #4

Great Grain Thursday

Description: Each child and teacher will bring in a favorite whole grain snack to eat together.

Materials: Note to go home to parents on Monday explaining the activity.

Activity: On Thursday everyone in the class will bring in a favorite whole grain snack item to eat together at snack time.

Handout C, Week 3

Classroom Activity #1

Sink Those Germs!

Description: Children will learn the six times they should wash their hands through a bean bag toss game.

Materials: 6 bean bags
laundry basket or tub

Activity: Children take turns throwing bean bags into the plastic tub. The teacher and the rest of the class calls out each of the six times hands should be washed. 1) after playing with pets
2) after using the bathroom
3) after sneezing, blowing your nose or coughing
4) after touching a cut or open sore
5) after playing outside
6) **before** eating food.

Handout C, Week 3

Classroom Activity #2

Lunch Colors

Description: Children will learn to Identify foods, specifically fruits and vegetables, by their colors.

Materials: Sheet of laminated construction paper that has labeled squares of primary colors

Activity: While the children are eating their lunch, the teacher will quietly move around the room and ask each child to identify the color and the food name they have in their lunch that day.

Handout C, Week 3

Classroom Activity #3

Eating the Alphabet

Description: Children will listen to and discuss a book about eating a variety of food following the alphabet.

Materials: Book “Eating the Alphabet” by Lois Ehlert

Activity: At circle time the teacher will read aloud “Eating the Alphabet” and show the pictures. The following questions can be used for discussion:

Is (insert a fruit or vegetable from the book) a fruit or a vegetable?

Have you ever tasted (insert fruit or vegetable from the book)?

Do you see a fruit or vegetable on this page that you like to eat?

Handout D, Week 4

Classroom Activity #1

Favorite Family Meal

Description: The child will draw and color the foods that are part of their favorite family meal.

Materials: Thin White paper plates
crayons

Activity: Direct children to draw and color the foods that would be on the plate of a favorite family meal. Remind them to include a fruit and a vegetable and a grain.

In circle time have the children share their favorite family meal with the class.

Handout D, Week 4

Classroom Activity #2

Lunch Colors

Description: Children will learn to Identify foods, specifically fruits and vegetables, by their colors.

Materials: Sheet of laminated construction paper that has labeled squares of primary colors

Activity: While the children are eating their lunch, the teacher will quietly move around the room and ask each child to identify the color and the food name they have in their lunch that day.

Handout D, Week 4

Classroom Activity #3

Growing Vegetable Soup

Description: The children will listen to and discuss the book "Growing Vegetable Soup."

Materials: Book "Growing Vegetable Soup" by Lois Ehlert.
some seeds from a green pepper or pumpkin

Activity: In circle time the teacher will read and show the pictures of the book "Growing Vegetable Soup."

Questions that can be used for discussion:

What do you think they are going to use the tools to do?

What are the three things seeds need to grow? (water, soil, and sunlight)

Show the squash blossom and talk about how vegetables start as a flower on the plant and then turn into a vegetable.

What are some of their favorite vegetables?

Ask what their favorite soup is. Talk about that soup puts different flavors of food together and taste good.

Handout D, Week 4

Classroom Activity #4

Vitamin Vegetable Wednesday

Description: Each child and teacher will bring in a favorite vegetable snack to eat together.

Materials: Note to go home to parents on Monday explaining the activity.

Activity: On Wednesday everyone in the class will bring in a favorite vegetable snack item to eat together at snack time.

Handout E, Week 5

Classroom Activity #1

Sensory Fruits and Vegetables

Description: Children will try to identify different fruits and vegetables by touch and smell.

Materials: Paper bags (lunch size)
variety of fruit and vegetables
knife

Activity: Place a variety of fruits and vegetables in individual paper bags. Allow children to put their hand in to touch the produce and they put their noses to the bag to smell the produce but they are not allowed to see the produce. The children then try to guess which type of fruit or vegetable is in the bag.

After the guessing is done, cut up some of the fruits and vegetables so the children can see inside to see the skin, pulp and seeds.

Handout E, Week 5

Classroom Activity #2

Lunch Colors

Description: Children will learn to Identify foods, specifically fruits and vegetables, by their colors.

Materials: Sheet of laminated construction paper that has labeled squares of primary colors

Activity: While the children are eating their lunch, the teacher will quietly move around the room and ask each child to identify the color and the food name they have in their lunch that day.

Handout E, Week 5

Classroom Activity #3

This Is the Way We Eat Our Lunch

Description: The children will listen to and discuss the book "This is the Way We Eat Out Lunch."

Materials: Book "This Is the Way We Eat Our Lunch" by Edith Baer

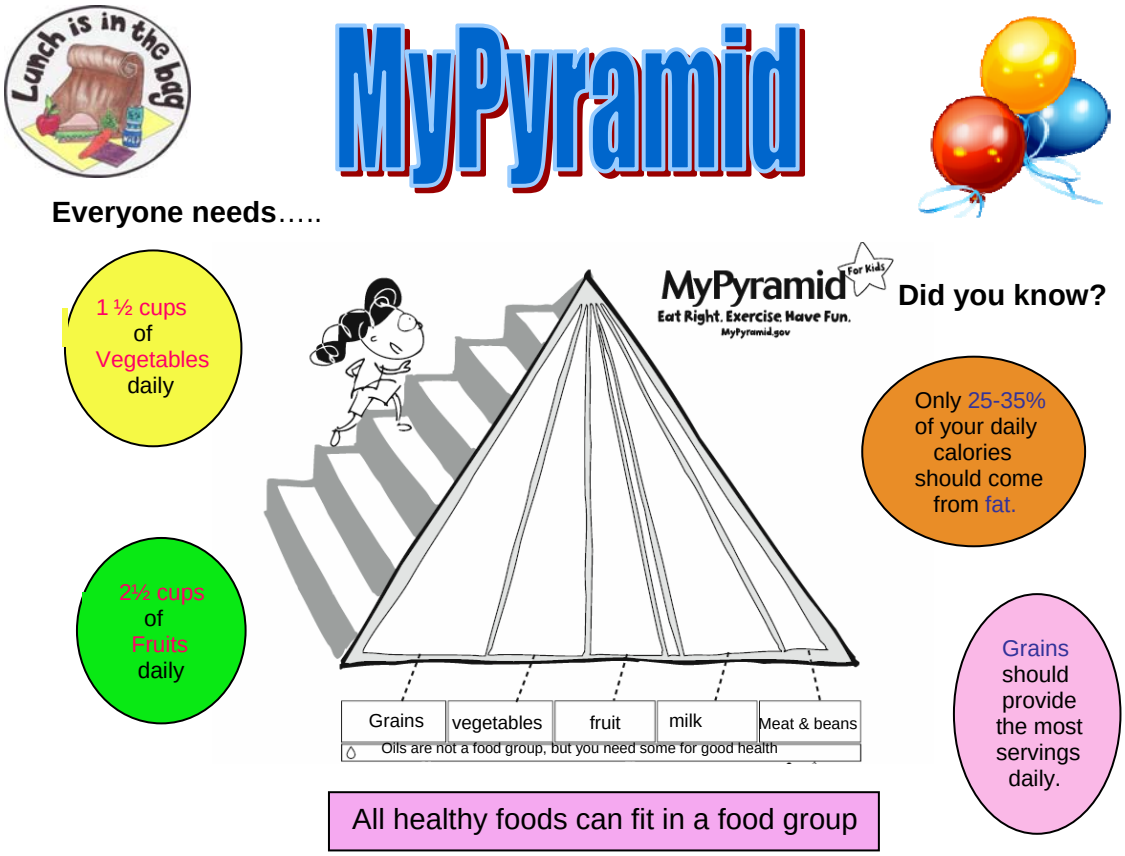
Activity: In circle time the teacher will read aloud the book "This Is the Way We Eat Our Lunch."

Some questions that can be use for discussion:

Have you tasted some of the foods the children in the book were eating for lunch?

Ask children to identify some of the foods from other countries that we eat in America.

Ask children if there are special foods that their families eat for special occasions.



DESCRIPTION OF INTERACTIVE ACTIVITY FOR CHILDREN

In front of the poster center on the top of the table will be 2 MyPyramid place mats. Between the 2 place mats will be small pictures of fruit, vegetables and whole grain foods that will serve as an interactive segment of Station 1. Children will be asked to put the fruit/grain/vegetable in the right section of the MyPyramid.

DESCRIPTION OF INTERACTIVE ACTIVITY FOR PARENTS

On an easel to left of the poster table will be a bulletin board. Parents will be encouraged to take a colored card and answer the question: What favorite healthy foods do you put in your child's lunch bag?

Parents will be given a colored 3" x 5" card to write their answer (not signed) and pin it on the bulletin board.

There will be a small table that will accommodate cards, push pins, pens etc.

The Information from the cards will be handed out in children's lunch boxes on the following Monday.

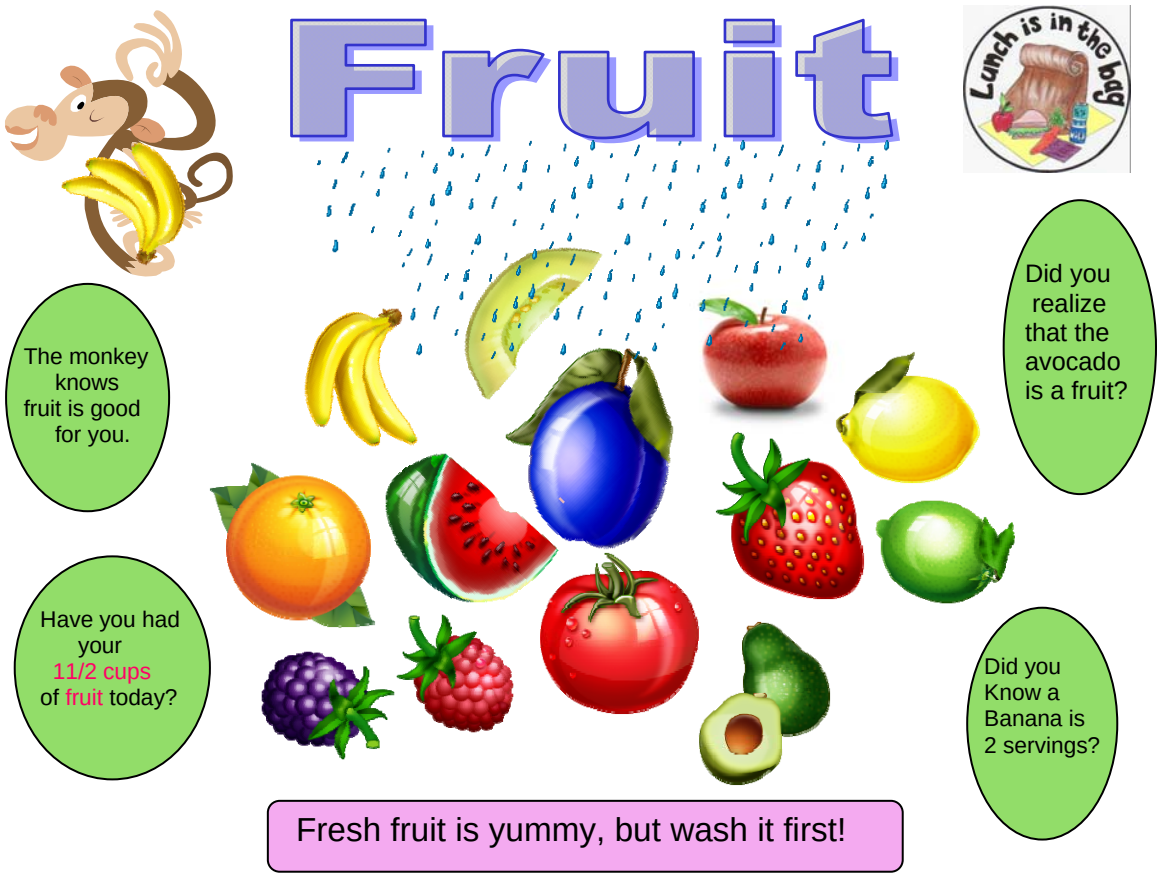
Poster 2 is in the Station 2 power point file

DESCRIPTION OF INTERACTIVE ACTIVITY FOR CHILDREN

In front of the 3 sided poster will be a metal strip lying on the table top with jars of grains, i.e. oats etc, and pictures above each jar with the name of the grain. The jars will be magnetically attached to the metal bar. There will be pictures that match the ones above the jars. Children will be told to find the jar/picture that matches their laminated picture of the grain, and place it below the jar to make a match.

DESCRIPTION OF INTERACTIVE ACTIVITY FOR ADULTS

On the left of the 3 sided poster board will be a poster board on a tripod. The title of the board will be "Which Grain Product Is A Whole Grain?" The board will be 2 pieces of poster board glued together with cut out pockets in rows that were made in the top piece of poster board. Behind each pocket will be a YES or a NO and the nutritional analysis of the grain product that is shown above the pocket. A parent will say they believe a grain product is whole grain and then open the flap pocket and will find the answer yes or no and the label from the product.



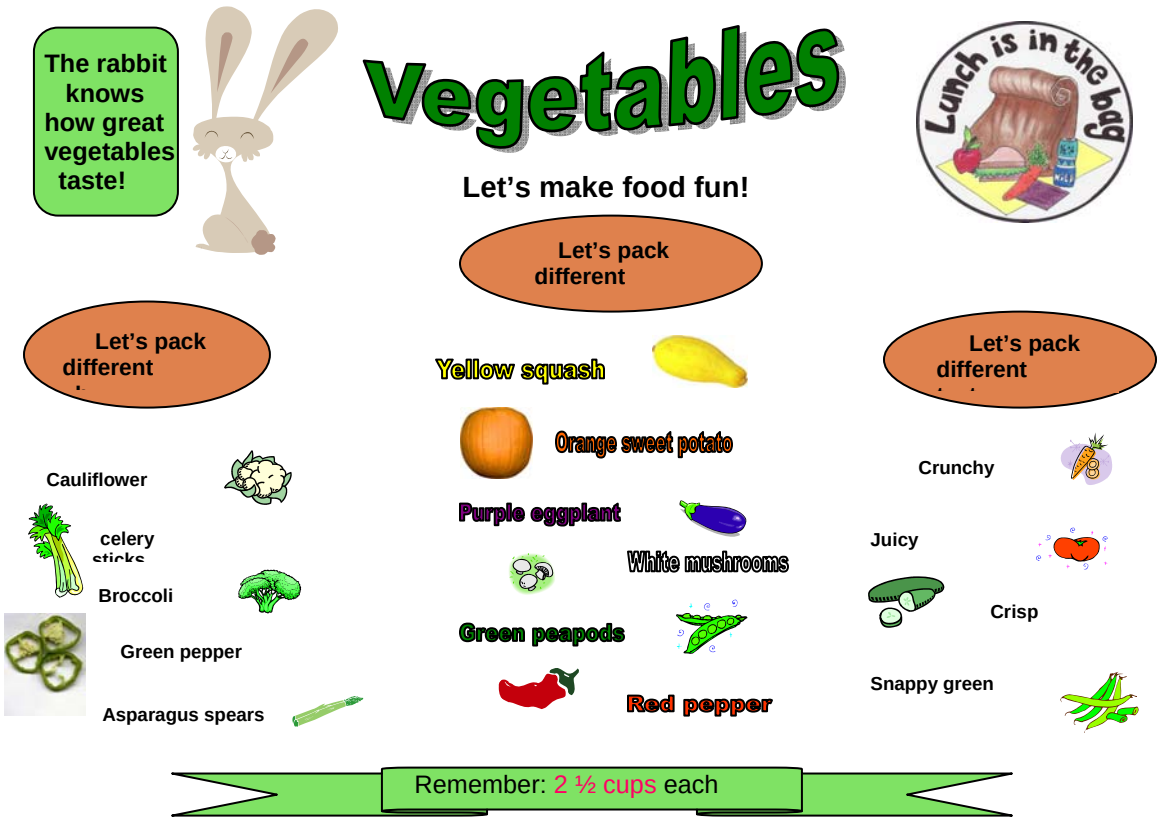
DESCRIPTION OF INTERACTIVE ACTIVITY FOR CHILDREN

Laminated pictures of fruit will be placed in front of the 3 sided Poster Board with a laminated picture of all the fruits on the Poster Board. The child is take each fruit and match the one on the large picture of fruits and tell the parent the color of the fruit. Also on the table, on the right and left sides of the table are copies of Handout C and recipe/preparation guidelines for fruits.

DESCRIPTION OF INTERACTIVE ACTIVITY FOR PARENTS

Parents will place a token/sticker in the small envelopes under the pictures of the fruits that their child likes best.

The results of the “voting” will go home in the children’s lunch boxes on Monday.



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DESCRIPTION OF INTERACTIVE ACTIVITY FOR CHILDREN

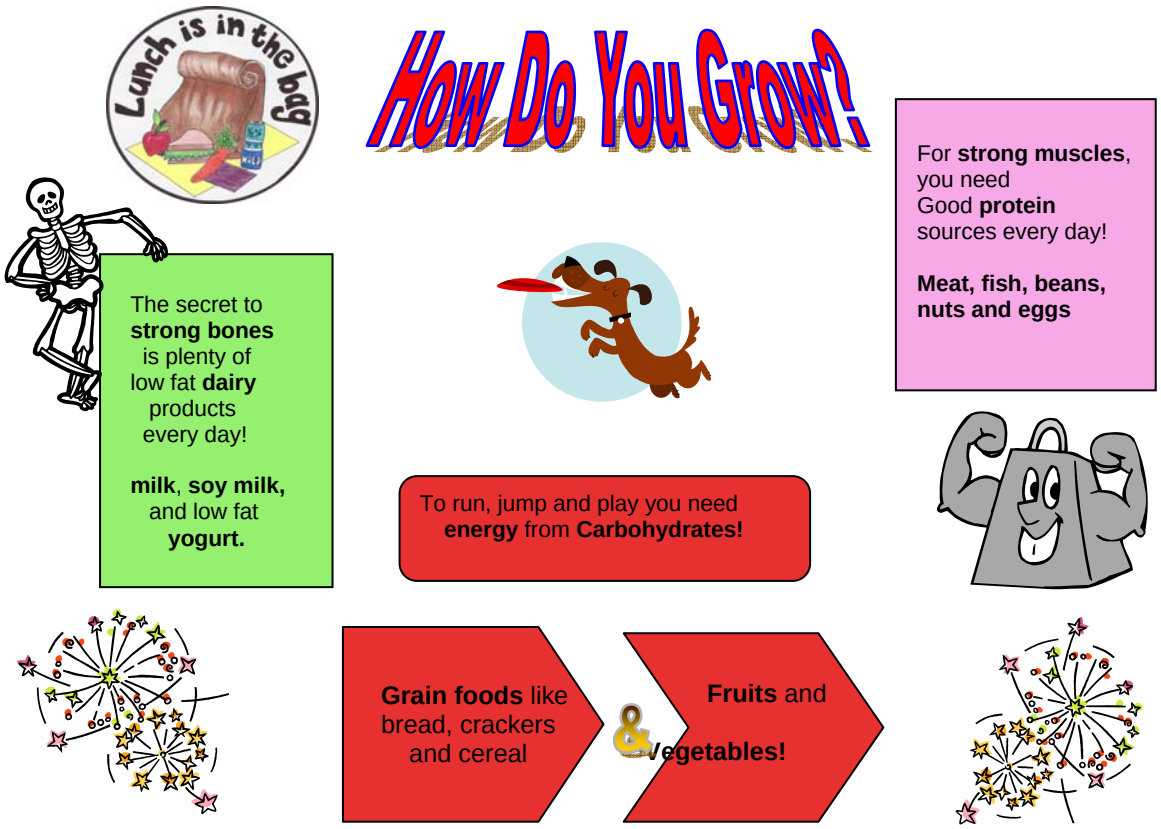
In front of the three sided Poster Board will be a laminated sheet of colorful pictures of many vegetables. Children will pick up laminated pictures of different vegetables and place them by the various colors. They will be asked to match the colors.

Also on the table, the right and left sides will be copies of Handout C and recipes/preparation guidelines for vegetables.

DESCRIPTION OF INTERACTIVE ACTIVITY FOR PARENTS

Parents will place a token/sticker in the small envelopes under the pictures of the vegetables that their child likes best.

The results of the "voting" will go home in the children's lunch boxes on Monday.



DESCRIPTION OF INTERACTIVE ACTIVITY FOR CHILDREN

"Lunch Star" a multi-colored star with each point representing a food group. Triangle pieces that are matching color with a food picture on them are on the table. Children are asked to complete a "Lunch Star" with a food for each point (from all 5 food groups).

Also on the table will be copies of Handout E and copies of buying produce in season from the Texas Department of Agriculture.

DESCRIPTION OF INTERACTIVE ACTIVITY FOR PARENTS

On a bulletin board on a tripod will be the question “How do you stretch your grocery dollar? Colored cards and push pins will be used by parents to write ways and items they use to stretch their grocery money.

Results from the bulletin board will be compiled and sent home in the child’s lunch box on Monday.

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